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Implementation of a dual system of higher education within foreign universities and enterprises

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Wilfried Hesser

Preface

This work is based on the author's personal experience in developing the project "Implementation of a dual system of higher education study at foreign universities" during the years 2014, 2015, 2016 and 2017.

Starting from the development of the dual system of vocational education and training (in-company training and schooling, i.e. apprenticeship to become a skilled worker) in the 19th and 20th centuries, this book traces the development of the dual system of higher education in Germany. Furthermore, individual chapters will communicate impressions backed up by data of the real situation of the dual system of higher education at universities in Germany and thus convey know-how on the organisation, structure and design of courses of study and cooperative state universities within the dual system. We combine this with our aim of offering guidance for the establishment and development of a dual system of higher education at foreign universities.

The cooperative state universities in Germany are organised decentrally and are therefore very heterogeneous. This is the reason behind our approach of referring our line of argumentation exclusively to the recommendations by the German Council of Science and Humanities, the Board of the Federal Institute for Vocational Education and Training (BiBB) and the German Accreditation Council.

One prerequisite for adopting a project aimed at implementing a dual system of higher education at foreign universities is that an analysis should be conducted within the context of the "Capacity WORKS" cooperation management system (see GIZ).

Experience shows that it is important when beginning to implement a programme of dual higher education to find out the level of knowledge on the dual system of higher education among the project participants. The easiest way to determine this is by holding a discussion, which will also reveal the participants' proficiency in English. A further step should establish a uniform level of knowledge on the dual system of study among the participants. Subsequent project design depends on the individual culture of the country, the joint teamwork, the commitment of the participants, the prescribed time frame and so on. Moreover, an initial step should give the participants an overview of the joint work, the objective, the number of workshops, content and prepared outcomes of the workshops so as to maintain the motivation over a period of two to three weeks. An additional point to note here is that professors and lecturers in developing, threshold and transition countries often have to rely on a second job and therefore cannot simply be available for a period of two to three weeks. Before the cooperation arrangement starts, it is therefore important to achieve an agreement with the management of the higher education institution while incorporating the participants in the scheduling.

Key stakeholders in establishing a dual system of higher education are the enterprises and organisations from the electrical industry as well as industry and

business in general. Also of special interest, however, are agencies such as the German Academic Exchange Service (DAAD), the German Chambers of Industry and Commerce (DIHK), German Chambers of Industry and Commerce Abroad, the Economics attaché of the German embassy and, in particular, local German and international companies. As a very general rule, this preliminary work can be conducted as part of a feasibility study, although access to the individual stakeholders may often be particularly time-consuming and not straightforward.

The potential for a closer link between vocational training and academic education has been clearly seen in discussions with managers from industry and representatives of various industry organisations. Interest in participating in a dual system of higher education has repeatedly been confirmed, yet at the same time clear limits have been expressed in terms of the organisational and financial involvement. In all their discussions, the enterprises and industry organisations have clearly outlined their desire for change towards a system of higher education incorporating specialist practical work and oriented towards the labour market. Reference has repeatedly been made here to the preliminary work by government or ministries and a need has been formulated for framework conditions that are both favourable and based on sustainable educational policy. More significantly than is the case in Germany, subsidies for and recognition of dual higher education by the responsible ministry in the partner country are considered to be prerequisites for the commitment of higher education institutions and enterprises or industrial organisations. In terms of the commitment of German cooperative state universities and experts, this means it is necessary to thoroughly examine the conditions concerning development policy in the higher education sector of the partner countries, independently of the level of commitment displayed by the individual higher education institution.

In our opinion, establishing a dual system of higher education is essentially dependent in its early years on the conviction, i.e. the willingness to cooperate, of medium-size and large enterprises, including international companies. Enterprises of such dimensions supply the necessary prerequisites such as a system of strategic human resources planning, an infrastructure of personnel and expertise, organisational department infrastructure, etc. The inclusion of partner countries with more than 90% of very small companies that have fewer than 20 employees may well be desirable but due to the commercial priorities of companies, particularly in developing, threshold and transition countries, is less advisable for a systematic dual higher education programme.

The approach that also exists in Germany which requires that competence development of dual higher education students should be oriented in line with the demands of the economy is questionable in the light of our research results[1]. The absence of transparent training requirements results in the occurrence of an enterprise-specific specialisation in line with the strategy of "training on the job". Practical experience alone, however, cannot be equated with systematically planned training. Promoting an enterprise-related specialisation for the students

1 Hesser, W.; Langfeldt, B. 2017

in the dual system restricts their competency profile and becomes a disadvantage for the students, especially when a change of enterprise takes place. The aim of a dual higher education course is not to be found in a tailored communication of knowledge that only has short-term and limited value on the labour market, but in a diverse competency profile for the students in the dual system that does justice to the idea of "employability" strived for within the scope of the Bologna reform. The added value of the content in a dual course of study is also in the interest of the employers and particularly in the development of educational policy and strengthening of labour and economic structures within the partner country.

On various occasions, the partners described access to German higher education institutions as difficult. An examination of this statement revealed that the overwhelming majority of German higher education institutions with dual courses only have a very limited range of English web pages referring to their dual higher education programme. This creates an access barrier for potential foreign cooperation partners that is difficult to overcome.

The Federal Ministry of Economic Cooperation and Development (BMZ), the Federal Ministry of Education and Research (BMBF), the German economy, DAAD and others advertise on various websites on the Internet for a programme of dual higher education at foreign higher education institutions. It is recommended that a cooperation network should be initiated comprising higher education institutions (universities of applied sciences) with dual courses of study or the cooperative state universities, represented by a coordination office within DAAD, which would also be a point of contact particularly for interested higher education institutions abroad.

Wilfried Hesser

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1 Dual higher education study – An introduction

1.1 Development of technical vocational training in Germany

Without exception, the development of craft trades from the end of the Middle Ages up to the 19th century is described as a continuing decline under which a liberating line was drawn with the introduction of the right to carry on a business or trade[1]. Causes were the separation of production and trade, large-scale forms of production (manufacturing and mass production), competition from new and in some cases imported types of goods and the integration of the market due to new roads and means of transport.

From the 16th to 18th century, the professional regulations applied, such as those concerning the period of apprenticeship, the apprenticeship premium, the journeyman's piece of work, the journeyman years or the examination for the master craftsman's certificate. Travelling journeymen learnt and disseminated different working techniques.

In the second half of the 18th century, the right to carry on a trade became one of the basic economic rights. The right to carry on a trade, also called free entrepreneurship, is the fundamental freedom for anyone to undertake commercial activity. Proclaimed during the French Revolution, the right to carry out a trade was also introduced in Prussia for the first time in 1810.

The development of vocational training in Germany can be interpreted as apart of the German educational system. Restoration of the craftsman's training originating in the Middle Ages with the qualification levels of apprentice, journeyman, master took place during the course of what is known as the "Mittelstands policy" of the empire, with the aim of protecting the declining middle income groups (trades, small businesses, smallholders) against proletarisation.

The most important new feature, known as the "Artisans' Protection Act" of 1897 enabled self-employed artisans to establish chambers of handicrafts as legal entities under public law. The running of a craft workshop was dependent upon the master title and the training of apprentices was subject to the "small certificate of professional competence" as from 1908. It was not until 1935 that the "large certificate of professional competence" was introduced. Afterwards, craftsmen were only allowed to conduct training in the profession in which they themselves had acquired a master's certificate.

The 1897 amendment to the trade law together with the 1908 amendment became the foundation of the "German system" of vocational education and training, the "dual system". The revival of vocational training based on guilds may be seen as a consequence of the rapid growth in population – particularly amongst young males, which developed into a mass problem that could no longer be overlooked. The aim was to integrate the proletarian and lower middle-class juveniles into the bourgeois nation-state through civic education. This development can be interpreted as a key change in approach towards vocational school. Stripped of

1 Greinert Wolf-Dietrich, Geschichte der Berufsbildung in Deutschland; Handbuch der Berufsbildung [History of vocational education and training in Germany, Handbook of vocational education and training]; Editors: Rolf Arnold, Antonius Lipsmeier; ISBN: 978-3-531-15162-5; 2006

their ideology and internationalised, the vocational schools are today a model of "the German philosophy of vocational education" – as distinct from the models of "job-based or competence-based training". The element of providing a permanent opportunity of work for juveniles resulted in the vocational schools becoming the second pillar of the "dual system" of vocational training. The year 1937 saw the introduction of uniform regulations for the maintenance of the vocational schools and their funding, the naming of the vocational schools, in-company training and vocational school tuition. After 1945, a public vocational school system was implemented in the Federal Republic of Germany, which did, however, largely follow the existing legal structure except that it was characterised by federalist conditions for each individual state. This new educational model meant that the training requirements of a developed industry oriented towards mass production were fulfilled on the basis of what may be called regulations such as job profile, training plan and examination requirements.[2] [3]

In parallel to the development of vocational training in Germany, a large number of industrial and polytechnic schools were founded in the first decades of the 19th century in the states of the German-speaking world. They remain important and significant up to the present day and include Berlin in 1821, Karlsruhe in 1825, Munich in 1827 and Hanover in 1831. The guiding principles behind the founding of these establishments were firstly the civil service and secondly the training in trades for the developing industrial society. From the 1850s, the development of the polytechnics was less influenced by the demands of industry than by its efforts to organise education on a scientific basis. During the course of this academisation process, the requirements for admission to polytechnic schools rose and hence their educational level did so as well.

Following the reorganisation of the polytechnics, which extended until the end of the 1870s, with a certain time delay came a renaming of the polytechnics to "technische Hochschulen", equivalent to universities with a focus on natural sciences and engineering. Karlsruhe, for instance, first received the tile of "Technische Hochschule" in 1885. In the states of the German Empire founded in 1871, the renaming was completed by 1890.

Towards the end of the 19th century, the high level of industrialisation resulted in a significant extension and differentiation of the subjects offered at these technische Hochschulen. While an average of some 70 technical-scientific teaching areas were represented at technische Hochschulen around 1870, in 1880 the number was more than 100, in 1890 around 200 and as from the 1900s at the Technischen Hochschule Berlin more than 350.

In the process of achieving equality with the universities, obtaining the right to award doctorates was a further objective. To coincide with the jubilee celebrations of the Technische Hochschule Berlin in October 1899, Kaiser Wilhelm II granted the technische Hochschulen in Prussia the right to award the title of "Diplom-Ingenieur" (Dipl.-Ing.) [graduate engineer] after a degree examination. After a further examination, graduates with a Dipl.-Ing. degree could then go on

2 de.wikipedia.org/wiki/Gro%C3%9Fer_Bef%C3%A4higungsnachweis#Geschichte. Retrieved in June 2017.

3 Greinert Wolf-Dietrich, Geschichte der Berufsbildung in Deutschland; Handbuch der Berufsbildung [History of vocational education and training in Germany, Handbook of vocational education and training]; Editors: Rolf Arnold, Antonius Lipsmeier; ISBN: 978-3-531-15162-5; 2006

to become doctors of engineering sciences (Dr.-Ing.). From the 1960s to the 1980s, most technische Hochschulen in German-speaking countries were renamed and become a "Technische Universität".[4]

Dealing the subject of **dual higher education study**, the following aims to give a brief historical outline in just a few lines.[5]

The current model of dual higher education study has its origins in the 1970s. Among the pioneers of the dual model of study are Baden-Württemberg with the companies of Robert Bosch, Standard Elektrik Lorenz and above all Daimler-Benz AG. Daimler-Benz drew up a concept to combine the classic form of vocational training in the dual system (apprenticeship), which had been neglected by school leavers in favour of higher education courses, with classical elements of higher education/university studies and thus make them attractive.

In 1972, the so-called "Stuttgart model" was presented to the public, on the basic principles of which the first Berufsakademien (colleges of advanced vocational studies) were created in Stuttgart and Mannheim. This newly created dual system of education enjoyed such a good reception among school leavers that, as early as 1982, the pilot project phase for the new model of training and studies was declared to have been successfully completed by the government of the federal state in Baden-Württemberg and the colleges of advanced vocational studies became firmly established within the educational system.

However, the qualifications from the colleges of advanced vocational studies were not recognised as academic qualifications, in contrast, for example, with the Diplom or Magister degrees from universities and Fachhochschulen (universities of applied sciences). This changed in 1995, when the ministers of education and cultural affairs for the länder expressed their recommendation to the federal states that the graduates from colleges of advanced vocational studies should be treated as graduates from universities of applied sciences. In the subsequent period, the success of the model of dual vocational education in Baden-Württemberg also inspired other federal states, such as Berlin, Thuringia and Saxony, to establish their own colleges of advanced vocational studies.

In Germany, the colleges of advanced vocational studies, have taken on different structures according to the state. In Baden-Württemberg and Thuringia, the cooperative state universities (Duale Hochschulen) exist as independent higher education establishments. In Rhineland-Palatinate and, for example, in Bavaria, the dual model of education has been integrated into the Fachhochschulen (today: universities of applied sciences) and combined with an umbrella organisation that brings together the practical partners, universities and students. The students study at a university and are trained in a state-recognised training occupation or the students choose a course of study with extended practical component. Phases of study and practical training alternate. After completion of the course of study, the university awards a Bachelor's degree, which according to the course of study may be a Bachelor of Arts, Bachelor of Engineering or Bachelor of Science.

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4 Greinert Wolf-Dietrich, Geschichte der Berufsbildung in Deutschland; Handbuch der Berufsbildung [History of vocational education and training in Germany, Handbook of vocational education and training]; Editors: Rolf Arnold, Antonius Lipsmeier; ISBN: 978-3-531-15162-5; 2006

5 cf. Sections 1.1 and 1.2

In the year 2009, the next decisive step followed in the state of Baden-Württemberg, which involved the state government transferring all colleges of advanced vocational studies into a newly created Baden-Wuerttemberg Cooperative State University (Duale Hochschule Baden-Württemberg – DHBW). With the foundation of the state-organised Baden-Wuerttemberg Cooperative State University (DHBW), the graduates of the dual study courses receive the internationally recognised Bachelor degree.

Dual courses of higher education now exist in all states of the Federal Republic of Germany and offer an efficient combination of practical periods within the enterprises and theory phases within the universities (or still in some cases the colleges of advanced vocational studies).

Cooperative state universities are not only relevant in terms of their effect on the regional economy and labour market policy but also contribute to stabilising the labour market.

In conclusion, it is also important to point out that the cooperative state universities do not have the right to award doctorates and lecturing qualifications as do the technical higher education establishments (technische Universitäte and technische Hochschulen), and, depending on the federal state and the structure of its laws, the cooperative state universities are also not able to independently award Master's degrees.

Figure 1 to 12 – Chapter 1.1

Fig. 1

Fig. 2

Fig. 3

Fig. 4

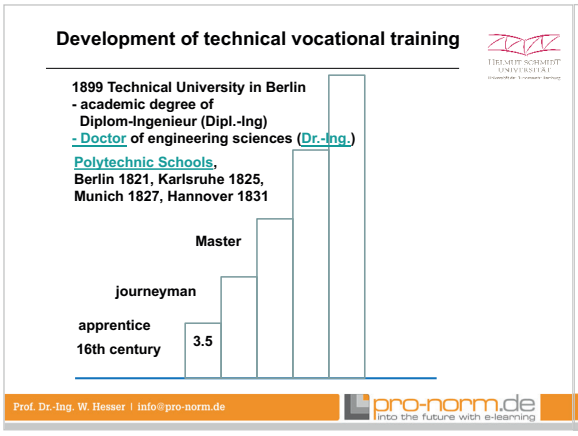


Fig. 5

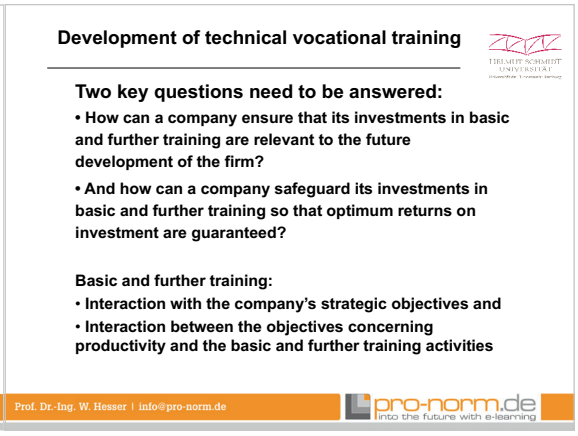


Fig. 6

Development of technical vocational training

Planning human resources demands

- Which and how many employees do we have?
  Inventory by qualification, age (when will employees probably leave?)
- Which and how many employees will be needed at a future point in time (where and for what purpose)?
  Planning , assessing teams and tasks,

Personnel development – identification of demand

- Which qualifications do we need ...for what purpose ...when?
  Prepare (target profile) *requirements profiles and compare with skills profiles*

Fig. 7

Development of technical vocational training

The personnel structure

- **Only the quality of employees will assure a company of a competitive edge in the long term**
- **Basic and further training must be regarded as a «mission critical» in the long term and not as a**
- **short-term «nice to have» activity.**

Fig. 8

Development of technical vocational training

While companies are applying varied strategies to stay ahead of the global competition, the value of human capital of the advanced industrial countries would be put into jeopardy without continuously investing in their workforce's skills and knowledge capital.

Lichia Yiu und Raymond Saner
Centre for Socio-Economic Development (SCES 081) 1211 Geneva 1

Fig. 9

Development of technical vocational training

Facts and figures on dual courses of study

- Start in **1977** as a pilot project with 164 students at the vocational academies in Stuttgart and Mannheim Baden-Wuerttemberg Cooperative State University (DHBW)
- 900 dual-mode courses (since 2005 up by 70 %)
- 34,000 students (up 20% in 2017 alone)
- Just under 3% of all students are enrolled in dual-mode courses (in Baden-Württemberg approx. 10%)

Fig. 10

Trend in partner enterprises and student numbers within dual higher education courses from 2004 to 2016

Year	Number of dual degree programs	Cooperative enterprises	dual students
2004	512	18.168	40.982
2005	545	18.911	42.467
2006	608	22.003	43.536
2007	666	24.246	43.220
2008	687	24.572	43.991
2009	712	26.121	48.796
2010	776	27.900	50.764
2011	929	40.874	61.195
2011*	879	40.555	59.628
2012*	910	45.630	64.093
2013*	1.014	39.622	64.358
2014*	1.505	41.466	94.723
2015*	1.553	42.951	95.240
2016*	1.592	47.458	100.739

Quelle: AusbildungPlus-Datenbank (Stand: Januar 2017)

Fig. 11

Students Winter Term 2016/2017

Students Winter Term 2016/2017 Statistisches Bundesamt Dez. 2017

University of Applied Sciences 956.717

Universities in total of **2.807.010** **Students**

Universities in total of **428**

University of Applied Sciences (without administrative colleges) 217 **(50,7%)**

Cooperative State University and University of Applied Sciences **202**

Dual Students in total of **92.467; (3,29%)**

DHBW 34.000 Students 2017

Fig. 12

1.2 Learning objectives of dual higher education study

In a first step, we aim to present the learning objectives for the dual higher education study integrating an apprenticeship and the course of study with extended practical component. The objectives for the students' *academic* qualification in the dual course of study are fully equivalent to the objectives of a non-dual course of study. Consequently, the learning objectives of the dual study courses are identical with those of classical Bachelor and Master courses.

The dual form of study is essentially characterised by an increased practical orientation. Through the various activities within the enterprise, the students learn how to practically apply their theoretical knowledge and extend it. At the same time, their involvement in company processes enables them to become acquainted with their area of activity under real conditions.

Students are introduced to their future activity and learn how to apply the theoretical knowledge, abilities and skills they have been taught during their studies within their professional work. Concepts, procedures and theories that they have learnt are tried out in specific practical situations and techniques and methods can be implemented in practical applications. At the same time, the students develop a professional identity by becoming familiar with their future career situation, the key working operations within their specialist field and the various aspects of in-company communication and decision-making processes. This also includes insight into technical, organisational, economic and social interrelations of the enterprise's operations. During the practice phases, the students are integrated into the working processes of the enterprise to an increasing extent and acquire competencies within the areas of activity of their future occupation.

By practically applying their theoretical knowledge, students learn how to assume responsibility for complex specialist activities as well as their abilities and skills. The aim of the dual system of study is for students to become actively involved in the decision-making processes within the enterprise as their practical experience grows. It is also the aim for them to be placed in a position from which they are able to develop and try out their own ways of solving problems during the course of the practical phases. In this way, they learn to scrutinise and extend their theoretical and practical knowledge. During the practical phases, students within the dual system are intended to assume responsibility as their competency increases within the areas of their future field of activity. A prerequisite for this is the presence within the enterprise of pedagogically trained personnel who are proficient within their special subject and who can provide continuous instruction and supervision.

In conclusion, we wish to make it clear that enterprises which feel themselves committed to quality standards should submit a training concept in writing for each practical phase in accordance with the students' progress through the course of study, which they coordinate with the university.
Cf. the website of Hamburg University of Applied Sciences: www.haw-hamburg.de

Figure 1 to 6 – Chapter 1.2

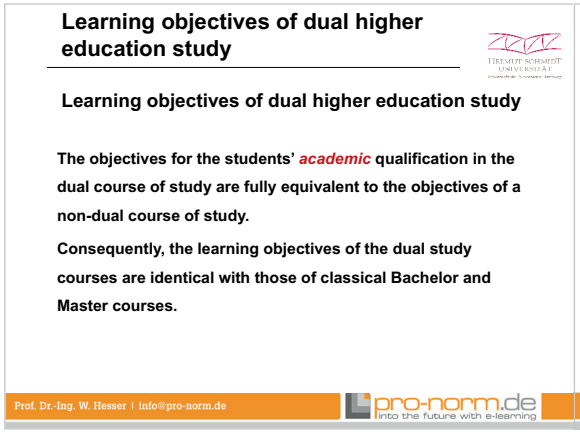
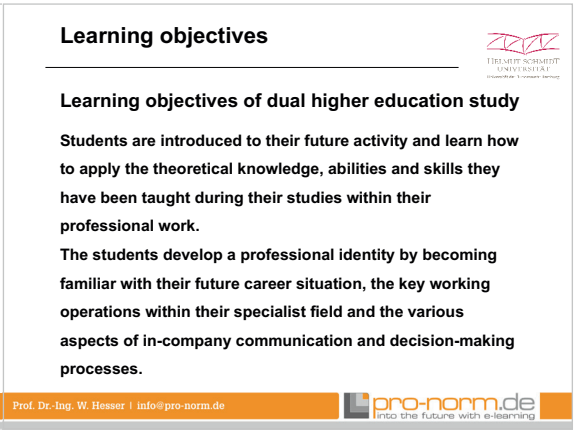


Fig. 1



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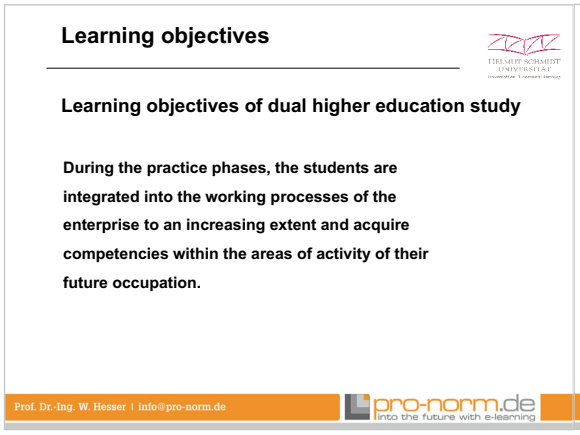


Fig. 3

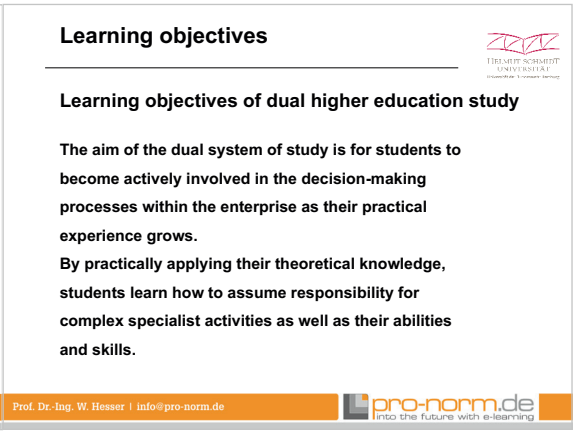


Fig. 4

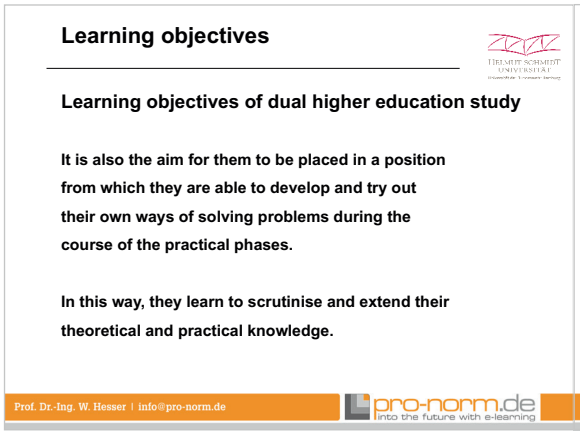


Fig. 15

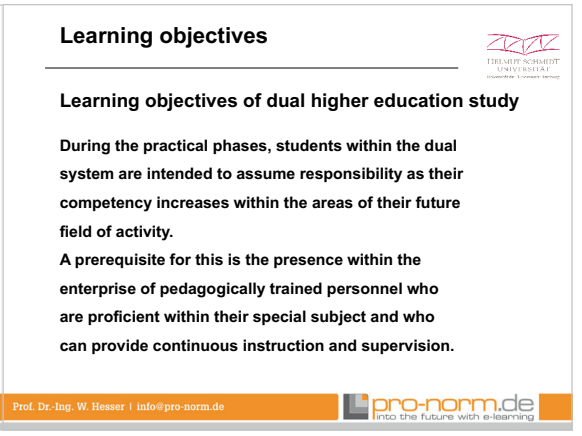


Fig. 6

1.3 Definition of dual higher education study

"Dual higher education study" aims to combine a course of higher education with business practice (including a recognised apprenticeship if necessary). The core of dual higher education study is based on two learning venues: higher education institution and enterprise (in the case of a simultaneous apprenticeship, there is also the learning venue of vocational school). The higher education institutions largely conclude cooperation agreements with the enterprises. In addition, the enterprises conclude training and learning agreements for the duration of the course of study with the students within the dual system.

Dual courses of study are primarily available in technical and commercial fields as well as, to an increasing extent nowadays, in the media and social spheres. The qualifications may be:

- Bachelor of Arts (B.A.)
- Bachelor of Science (B. Sc.)
- Master of Arts (M.A.)
- Master of Science (M. Sc.)
- Bachelor of Engineering (B. Eng.)
- Bachelor of Laws (LL.B.)
- Master of Engineering (M. Eng.)
- Master of Laws (LL.M.)

The individual study models may be described as follows:

A dual course of study is offered in 4 different types:

- **integrating an apprenticeship**
- **integrating work experience**
- *integrating professional employment (not considered here)*
- *in-service (not considered here)*

Courses integrating an apprenticeship (sometimes also known as collaborative courses of studies) have an integral apprenticeship, i.e. in addition to the academic qualification, e.g. Bachelor of Arts, a professional qualification specialising in finance is also obtained, e.g. as a bank officer. A training agreement and sitting an examination before the Chamber of Industry and Commerce (IHK) are prerequisites for the vocational qualification.

Courses integrating work experience have an extended phase of practical work within an enterprise as an integral part. This demands a work experience/learning agreement or training agreement with the enterprise. In order to commence a course of study integrating professional training or work experience, candidates must demonstrate that they have either Abitur ('A' level equivalent – i.e. standard university entrance requirements) subject-specific university entrance level or university of applied sciences entrance level, according to the specific higher education institution.

Dual courses of study integrating employment and/or in-service dual courses of study are courses for continuing vocational education. Studies are combined with a full-time professional occupation. These models also aim at a reciprocal relationship between the contents of the professional occupation and the course of study, but this is not obligatory.

Duration of a dual course of study: Dual higher education courses of study generally end with a Bachelor qualification and take 3 to 5 years depending on

the course, learning venue and type of course. Among these, the course of study integrating work experience is shorter because it does not include a vocational training qualification).

Rotation between practical training and studies: according to a study by Hesser and Langfeldt[6] approximately 50% of the students within the dual system in Germany study continuously during the semester and only work within the enterprises during the period between semesters, when no lectures are scheduled.

The fundamental variations in rotation between "other time models" are as follows:

- Rotation between in-company training or qualification measures and studies on a block basis, e.g. rotating on a 2-month to 3-month basis, approx. 55.8%.
- Rotation between in-company training or qualification measures and studies on a block basis, e.g. rotating the studies on a weekly basis between theory at the university and work experience within the enterprise, approx. 12.7%. Every other week, i.e. half of the course duration, is spent working within the enterprise responsible for the work experience.
- Rotation between in-company training or qualification measures and studies on a block basis, e.g. rotating the studies on a weekly basis between 3 days of theory at the university and 3 days of work experience within the enterprise, approx. 10.5%.
- In addition to the in-company training or qualification measures, studies take place outside of the working hours, e.g. several times a week in the evenings plus (in some cases) on Saturdays, at a rate of approx. 21%.

Prerequisites for the applicants and the enterprises
The formal prerequisites for applicants are based on the university's regular access and admission requirements. These are essentially as follows:

1. Abitur ('A' level equivalent) / university of applied sciences entrance level / master craftsman's certificate,
2. Training/internship agreement with an enterprise,
3. Compliance with any entry restrictions (numerus clausus),
4. Fulfilment of any special admission examinations, aptitude procedures.

Prerequisites for applicants for a Master course within the dual system
Applicants must meet the regular qualification criteria and admission requirements of the university:

1. (Dual-system) Bachelor qualification,
2. Training/internship contract with an enterprise,
3. Compliance with any entry restrictions (numerus clausus),
4. Fulfilment of any special admission examinations, the university's aptitude procedures.

6 Hesser, W.; Langfeldt, B.

However, we feel it is important to point out that the applicants are largely selected by the enterprises (human resources department). They often have to undergo an assessment procedure or interview, depending on the enterprise. In a further step, the selected applicants have to apply for a place of study at the university through the regular procedure.

A training or learning agreement with the enterprise has to be submitted for application to a university. It is necessary to observe the qualification criteria and admission requirements of the university in this respect. The general application documents for the university have to be attached to the training or learning agreement with the enterprise.

Where the academic education takes place within the dual system of study is part of the contractual agreement with the enterprise and depends on the course.

In Germany, there are a number of fundamentally different educational establishments for dual courses of study:

- Universities,
- Higher education institutions (universities of applied science),
- Administration and business academies,
- Colleges of advanced vocational studies.

Universities[7] are higher education institutions with the right to award doctorates, which serve to maintain and develop the sciences through research, teaching and study. The universities in the German-speaking world offer educational courses in accordance with the International Standard Classification of Education (ISCED), the UNESCO framework for organising information on education, in Levels 5 and 6. They belong to the tertiary stage of education.

Higher education institution is the generic term for establishments within the tertiary stage of education. A distinction is made between scientific, scientific and applications-oriented, artistic-academic, creative-academic and artistically oriented higher education institutions. They differ markedly on account of the right to award doctorates.

The **administration and business academy (VWA)** is an educational establishment under private law in Germany. Administration and business academies are mainly organised under the umbrella of the Federal Association of German Administration and Business Academies (VWA/BA). The academies offer courses of education and further training for specialist and management personnel from the administrations at federal, state and municipal level as well as for similar personnel from the free market economy. The funding organisations for the academies are public-law and/or non-profit bodies such as federal states, municipalities or associations of municipalities, professional bodies, associations of companies and also private enterprises.

A **college of advanced vocational studies (Berufsakademie – BA)** is an educational establishment in the tertiary stage of education that offers a course with a strong practical relevance. The theoretical education at the college of advance vocational studies is linked with the practical training within an enterprise (dual

7 From the Latin universitas magistrorum et scolarium, "community of teachers and learners", later in Humboldt's interpretation as universitas itterarum, "the entirety of the sciences"

system). The qualifications awarded by the colleges of advanced vocational studies are recognised by the state.[8]

In a brief treatment of the **prerequisites for enterprises** that offer dual higher education, the German Council of Science and Humanities (WR) describes the structural interlinking of the teaching/study venues enterprise and higher education institution as well as the joint drafting of the learning objectives in the curricula and practical training as a primary objective.

A practical apprenticeship is based on a prepared concept of teaching and learning. This provides the foundation for outstanding achievements by the dual-system student in the subsequent professional activity. For this reason alone, a high level of training quality should be one of the targets of the enterprise.

However, the quality of training is also connected with the supervision of the dual-system students. The WR also has a clear statement on this aspect. The higher education institution and the enterprise have to jointly draw up a supervision concept in which the supervisors and their responsibilities are unequivocally specified.

In an ideal case, there will be a qualified contact person or mentor within the enterprise to give support for the students should any differences and irregularities occur during the practical phases. This contact person should know the study or examination plan and maintain contact with the university. Furthermore, it is recommended that the mentor supporting the students during the practical phase should have an academic education in order to ensure the best possible support during the practical phases and during the work for the Bachelor or Master thesis.[9]

8 See wikipedia.org/wiki/Universität#Begriff; Retrieved June 2017
9 See also Chapter 3 "Supervision of the students"

Figure 1 to 12 – Chapter 1.3

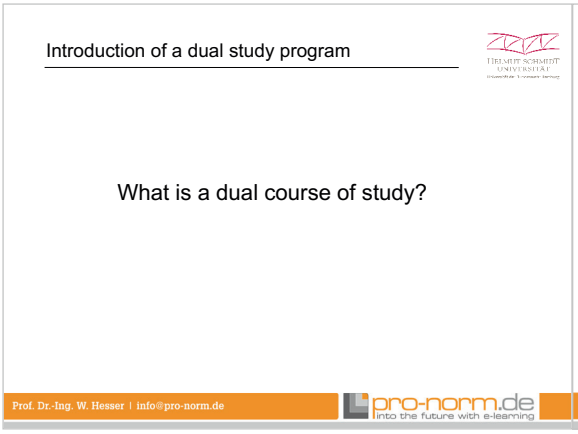
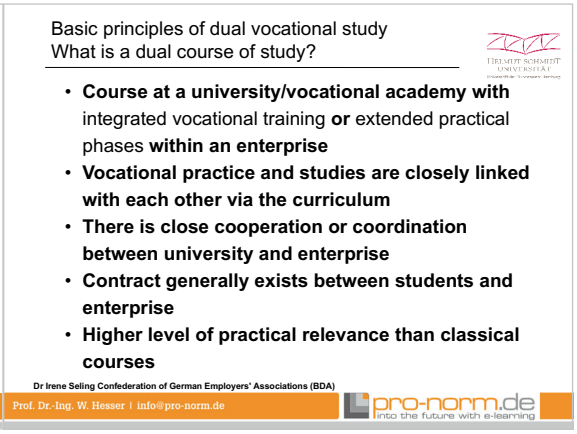


Fig. 1



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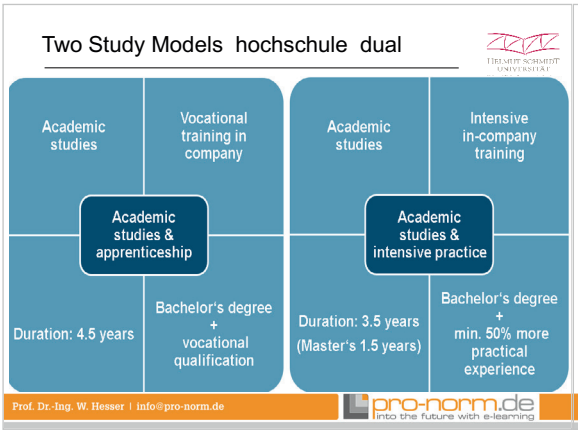

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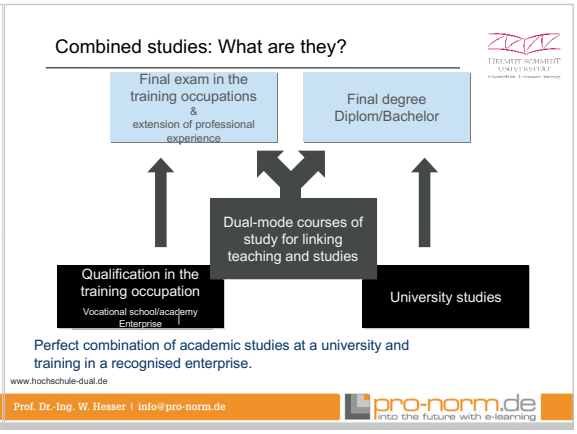

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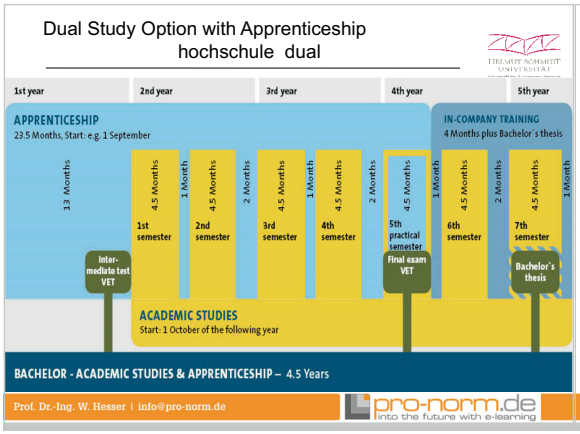

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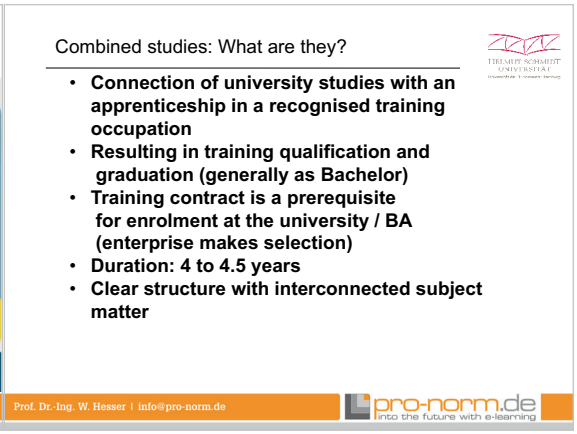

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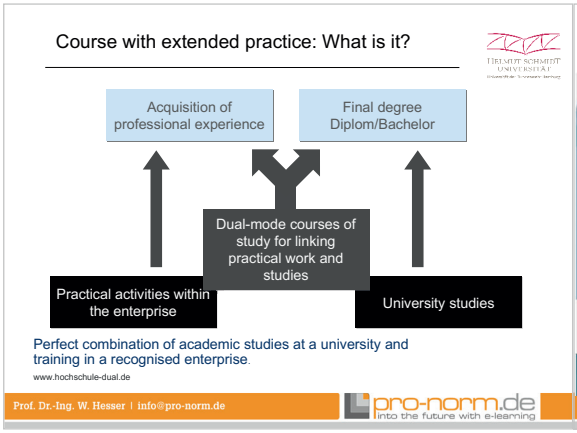

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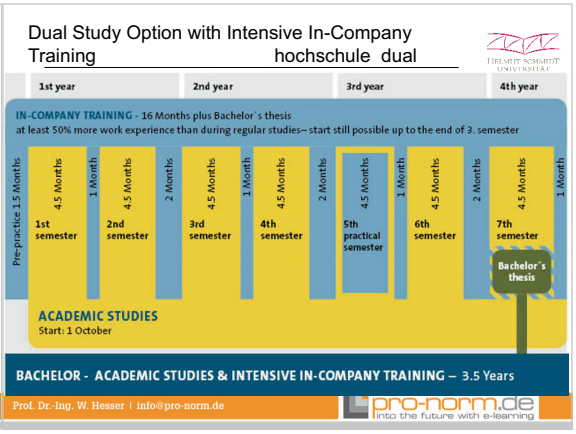

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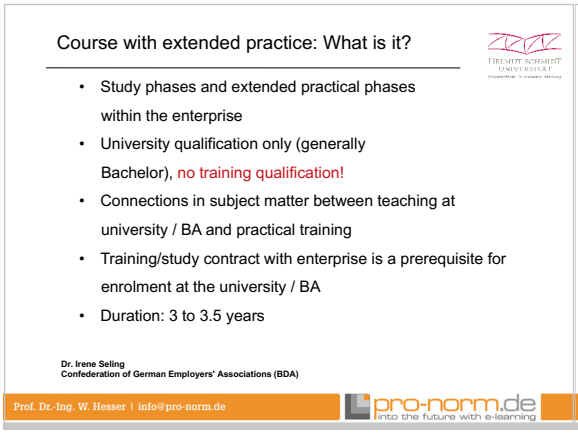

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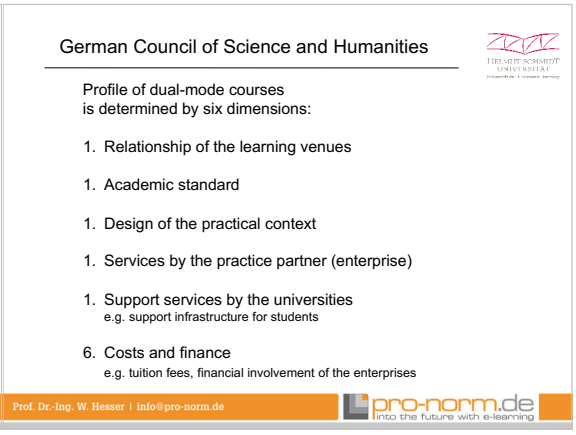

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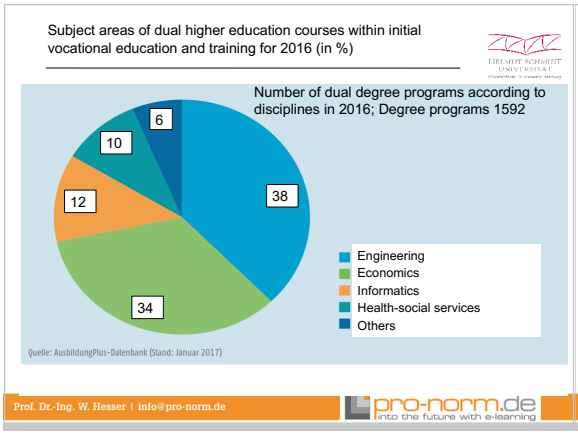

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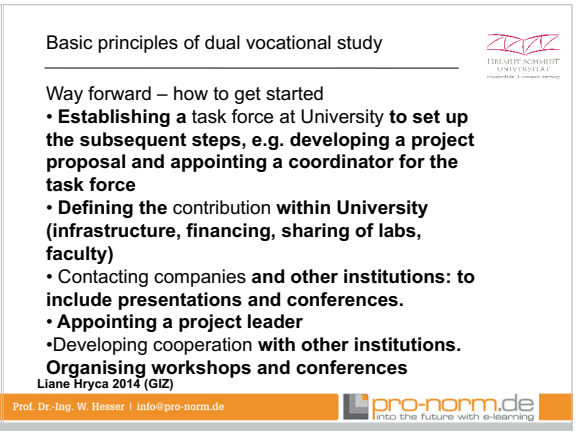


Fig. 12

1.4 Advantages for the university – dual higher education study

Regardless of the organisation, structure and legal status of dual educational establishments, the higher education institutions obtain recognisable benefits through the dual form of study,

The universities gain:

- young, highly motivated, interested and responsible students,
- young, efficient, disciplined and dedicated students,
- students with a high level of social commitment in the university (e.g. involvement in committees such as faculty boards, participation at trade fairs, etc.),
- students who are outstanding top performers in the course (winning of awards, e.g. best undergraduate thesis),
- students who largely adhere to the standard period of study,
- students with very low dropout rates,
- students who act as powerful role models for their fellow students,
- future top performers within the enterprises as partners for establishing cooperation networks,
- access to new, dynamic technological developments within innovative enterprises,
- insight into technological change within various enterprises and industries.

By establishing dual courses of study, the higher education institutions also gain the opportunity of being able to grow in line with their own preferences and thus develop unique selling propositions that clearly place them in competition with state and private higher education institutions within the tertiary education system.

With the dual form of study, the higher education institutions are contributing to improved coordination between employment and educational systems and to an increased permeability between vocational and academic education.

Another important aspect for the higher education establishments is their participation in the development of educational policy within higher education.[10]

10 See www.arbeitgeber.de/www/arbeitgeber.nsf/res/Duales-Studium.pdf/$file/Duales-Studium.pdf; Retrieved in June 2017

Figure 1 to 6 – Chapter 1.4

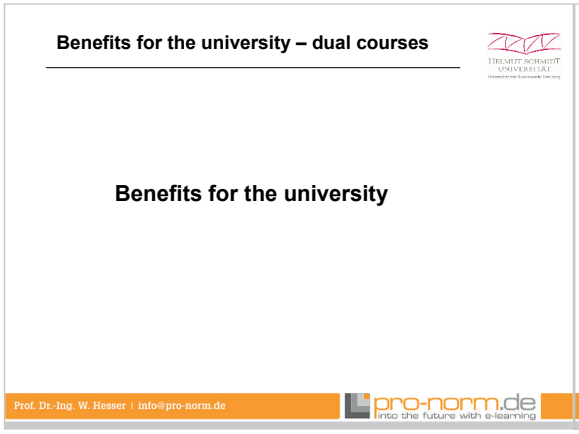
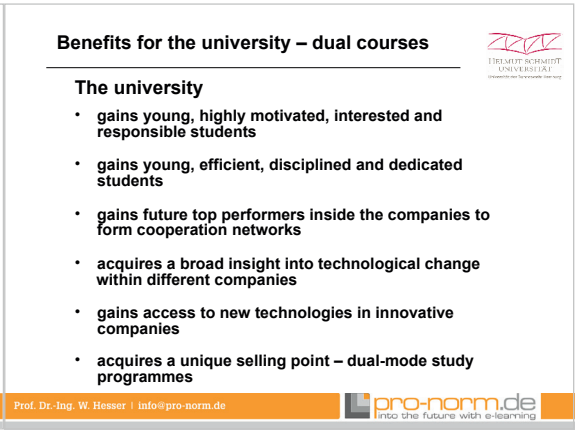


Fig. 1



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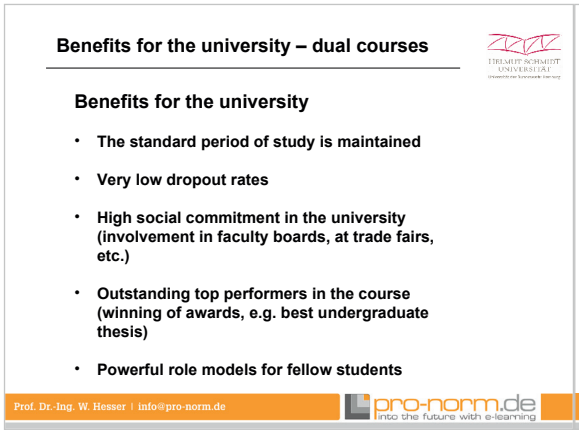

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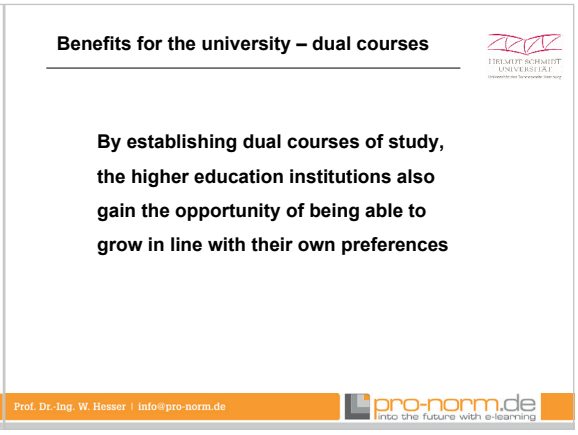

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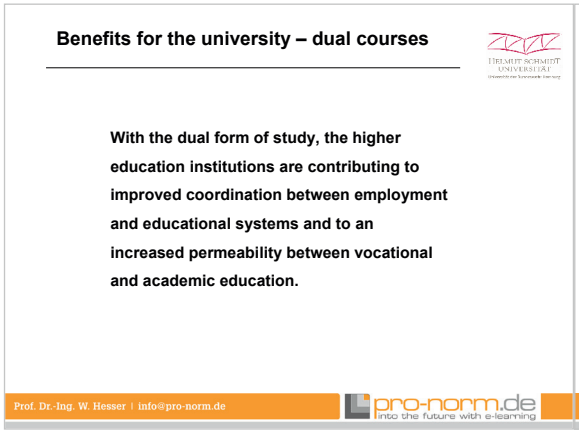

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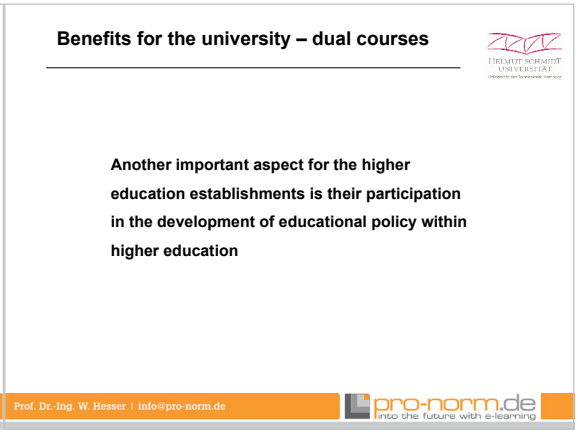


Fig. 6

1.5 Advantages for the students – dual higher education study

The motives for studying among students engaged in regular full-time education at a university or university of applied sciences differ from those of students within the dual system, whose motives are particularly related to the dual nature of the course.

Students on courses integrating an apprenticeship hope to gain substantial career benefits on the employment market through the double certification expressed in the two qualifications they obtain.[11] In a comparison of students from different educational establishments, Wolter (2016) comes to the conclusion that "the choice of a course is the decision in favour of a specific career model – high professional security and career ambitions, a low interest in academia and research, a strong practical relevance of the course –…".[12]

Furthermore, the decision to enrol in a dual course of study seems to be closely linked with the expectation of achieving a higher entry position and salary as well as better opportunities for promotion as compared with employees who have purely company-based vocational training. Among the students of engineering sciences and economics within the dual system who we surveyed, 66.2% also cited this aspect of good chances on the employment market and future prospects as one of the two most important motives for studying (see Table 1).

Main reasons	Total	Eng. men	Eng. women	Econ. men	Econ. women
Strong professional or practical relevance	72,1	73,6 [ab]	78,3 [ab]	66,8 [b]	68,5 [b]
ecturers with higher practical competencies	5,2	4,0 [b]	2,2 [b]	8,4 [b]	6,8 [b]
Small study groups	14,7	12,6 [b]	10,7 [b]	19,3 [b]	17,4 [b]
Compact course duration	5,5	5,5 [a]	2,1 [ab]	7,0	6,3 [b]
Structured course of study	12,6	12,3 [b]	10,1	15,6 [ab]	12,0 [a]
Opportunity to earn money during the course	66,9	71,2 [a]	63,1 [a]	67,9 [a]	61,6 [a]
Good chances on the employment market and future prospects	66,2	66,8 [a]	61,4 [ab]	67,3	69,1 [b]

Table 1

Explanation of the indices: a: There are significant gender-specific differences within the subject; b: There is a significant difference between the subjects within the gender subgroup (e.g. prospective women engineers differ significantly from prospective women economists)

11 Krone 2015b
12 Ibid.: 48

Another reason very frequently given as a key criterion for selecting a dual course of study, as quoted by 67% of the students in our survey, is the opportunity to earn money during the course. One possible explanation as to why this motive for study was quoted may lie in the social origins of the students within the dual system. If it is actually the case that only roughly one in four fathers and merely one in five mothers of students in the dual system have an academic qualification and such families predominantly have an average level of household income,[13] financial independence from the parental home and job security could represent plausible reasons for choosing a dual course of study.

The anticipated greater professional or practical relevance of a dual course of study compared with a regular course proves to be a particularly relevant motive for the choice of course in all the available empirical investigations[14]. In our survey, too, the greater professional and practical relevance of a dual course of study was listed as the most frequent reason for enrolling on a dual course of study, as quoted by 72% of respondents.

In conclusion, the advantages and disadvantages from the students' perspective are summarised below:

Advantages for students in the dual system

Students in the dual system

- receive a practically based university education,
- are able to apply and extend what they have learnt during practical company work in a timely and regular manner,
- receive optimum support through mentors and tutors,
- are ideally incorporated into company structures, working methods and project procedures,
- gain experience in a wide range of departments within the enterprise (purchasing, production, engineering design, etc.),
- assume individual responsibility for projects according to their level of qualification,
- gather important skills in the interfaces between the departments of an enterprise,
- undergo development in acting independently (project work),
- benefit from an early start to their career after completing their education,
- have outstanding job and career opportunities,
- receive financial security through continuous remuneration,
- largely receive an accredited Bachelor qualification,
- are employees of the enterprise.

Disadvantages for students in the dual system

- the double burden with the dual system of study: academic study and training within the enterprise,
- no standardised contracts between students within the dual system and enterprises,
- no uniform remuneration from the enterprises,

13 cf. Krone 2015b

14 Gensch 2014; Krone 2015b; Pohl 2010

- only approx. 40% of students within the dual system receive a contractual agreement of continued employment after their studies,
- a training and qualification plan for students in the dual system only exists in 61% of enterprises,
- very limited international education (semester spent abroad).

Prof. Dr. Rita Meyer, Leibniz University Hannover, defines the professional performance-related skills of students in the dual system as follows:

- **Technical competence:** Readiness and ability to solve assignments and problems in a target-oriented, appropriate, methodical and independent manner on the basis of subject knowledge and ability as well as to evaluate the outcome.
- **Social competence**: Readiness and ability to grasp and understand social relationships and interests, as well as to discuss and communicate with others in a responsible manner.
- **Personal competence**: Readiness and ability to reflect on one's own development and to develop further in relation to individual and social concepts of values.
- **Methodological competence**: Application of procedures and techniques that serve to structure one's own work and the work within the group as well as personality development and the development of social relationships.
- **Subject-specific reference** from systematic and theoretical elements of knowledge.
- **Knowledge of work processes**: Ability to deal with subject-specific knowledge from knowledge of work processes in a manner that is relevant to the situation and productive.
- **In-company learning** in dual higher education means developing competence in complex practical situations.
- **Linking of learning contents** (systematic and theory-based knowledge) and forms of learning (cognitive and experience-based learning).

Figure 1 to 8 – Chapter 1.5

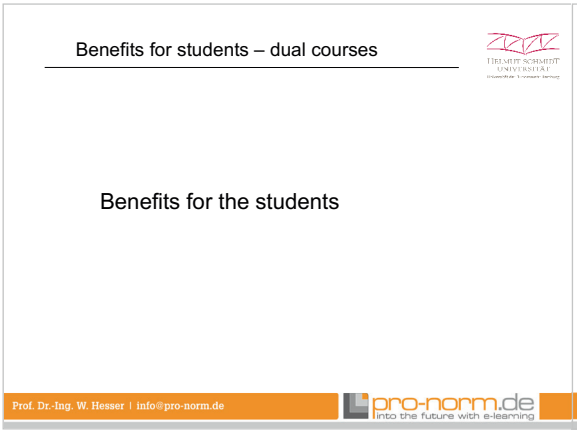


Fig. 1

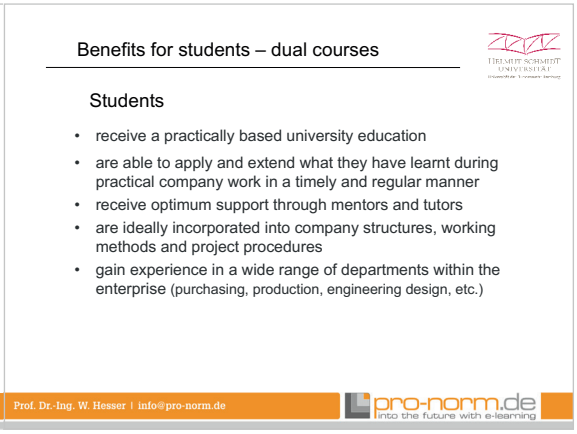
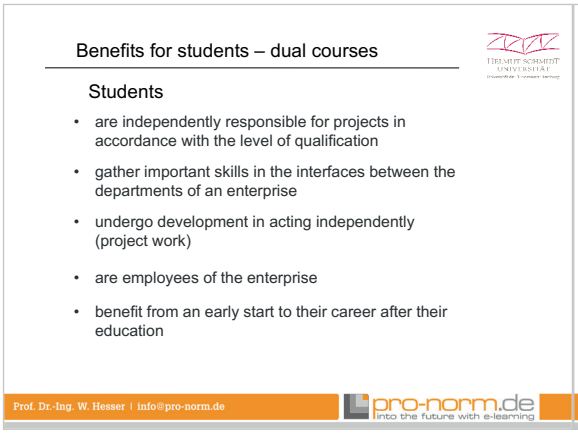


Fig. 2



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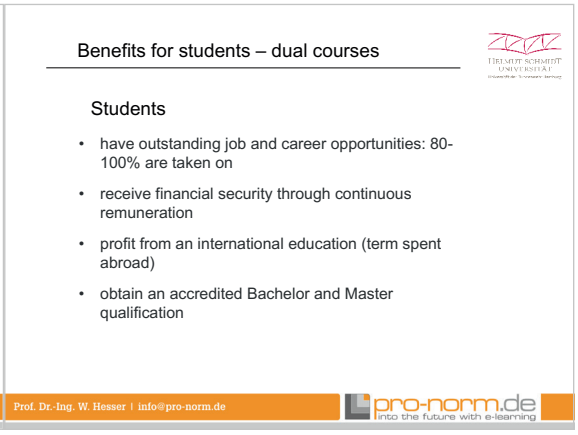

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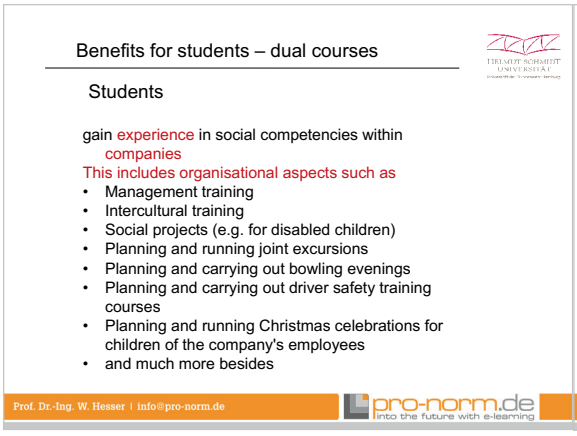

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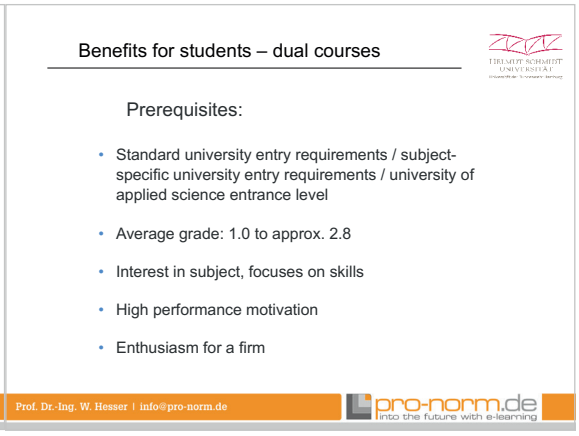

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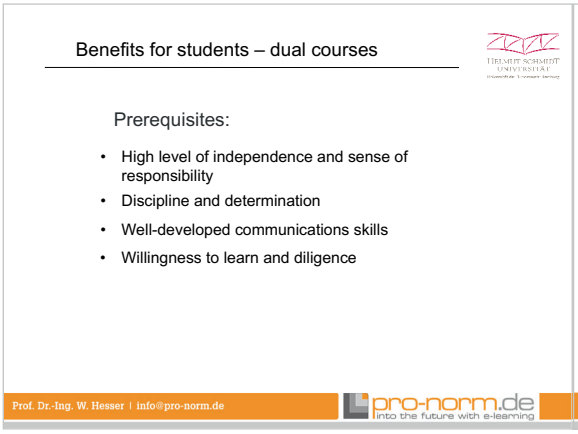

Benefits for students – dual courses
Prerequisites:
• High level of independence and sense of responsibility
• Discipline and determination
• Well-developed communications skills
• Willingness to learn and diligence
Prof. Dr.-Ing. W. Hesser | info@pro-norm.de
pro-norm.de
into the future with e-learning

Fig. 7

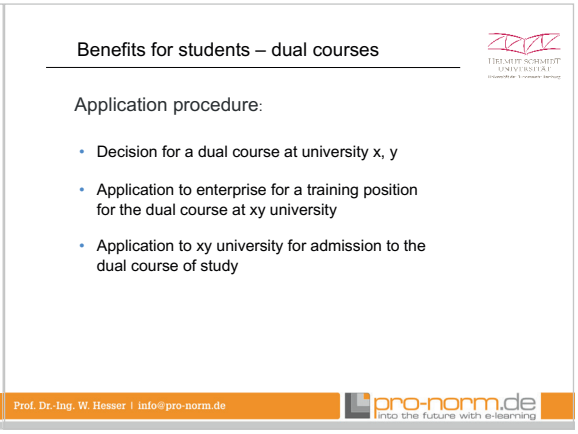

Benefits for students – dual courses
Application procedure:
• Decision for a dual course at university x, y
• Application to enterprise for a training position for the dual course at xy university
• Application to xy university for admission to the dual course of study
Prof. Dr.-Ing. W. Hesser | info@pro-norm.de
pro-norm.de
into the future with e-learning

Fig. 8

1.6 Benefits for enterprises – dual higher education study

The qualification and motivation of employees in connection with their attitude to the enterprise are really important resources for every organisation. Our understanding of the term "qualification" in this respect encompasses the employees' knowledge, abilities and skills as well as their views and feelings in connection with the enterprise.

A sound, strategically oriented concept of human resources development and personnel planning linked with the quality management and implemented into everyday routine has an impact on employee and customer satisfaction as well as on the corporate culture as a whole.

In the present day, which is defined by changes that occur in rapid succession, one of the main tasks of human resources development is to enable and support employees to react to current challenges in a flexible and timely manner. Only in this way is it possible to secure the ability of the enterprise to survive despite the strong competition.

Both the concept of vocational training in the dual system (apprenticeship) and dual higher education are part of human resources development and personnel planning in many companies today.

Current issues and findings relating to politics, educational policy, economics and organisation of labour in the sense of structural changes within the world of work receive consideration in the human resources development and planning of the enterprises. Here the objective of the enterprise, in addition to considering the more readily technical competencies of the employees, is to take account of personality characteristics that place employees in the position to extend and meaningfully apply their knowledge and abilities. The attention of organised teaching/learning processes is not centred on technical competence alone as a constituent part of human resources planning but also on what are called the employability skills, in other words the occupational competence. For the teaching/learning processes this means the technical competences of the employees should not be communicated and learnt by subject-oriented means alone but, from the outset, within the context they are used, oriented towards their implementation, in combination with the acquisition of employability skills.

New forms of work organisation with the dismantling of hierarchies, higher levels of responsibility for individuals and groups, teamwork, process-orientation and also in-company customer-focus demand a higher level of technical competence from the individual but, in addition to this, learning competence, critical thinking, problem-solving competence and more social competence overall. From its individual employees the learning enterprise demands learning competence in the sense of learning in work processes and of a learning design of the work process to promote innovation and productivity. It would therefore seem only natural to exploit the learning potential of the work processes even during the general and vocational training phase and the dual higher education study, so that in this way learning and working can be combined for the benefit of the learners at an early stage. This can be particularly well implemented within the context of dual higher education programmes.

Research conducted in the psychology of learning and work confirms that action-oriented learning has an efficient, effective and lasting impact. The concept

of "dual higher education", consisting of professional practice and the practical learning venue, is particularly well suited as a means of organizing and structuring action-oriented learning.

Concluding this section is a summary of the benefits presented from the perspective of the enterprise:

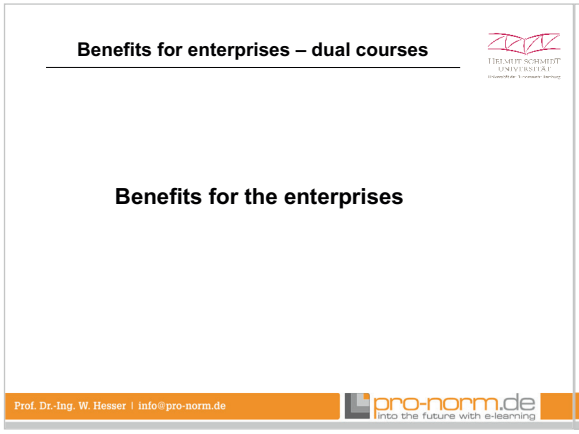
Advantages from the enterprise perspective
Model 1: Combined studies

- Securing of highly qualified, performance-motivated recruits with a dual qualification (vocational qualification + academic university qualification) at an early stage,
- Productive and responsible work by the young people within the enterprise while they are still studying. No need for company induction period at the end of the course,
- Teaching of important key competencies to the students in their practical work,
- Very long familiarisation period – there is sufficient time to determine the optimum area of employment for the future graduates,
- Students or graduates exhibit strong loyalty to their enterprise,
- Three times as much practical and in-company experience from graduates within the dual system as compared with conventional graduates – and this is accompanied by an equal level of higher education,
- Intensive contact between enterprises and universities, extension of the technology and knowledge transfer,
- The dual qualification also means that there is no loss of good trainees to a course taken later – the programme of study with integrated vocational training attracts young people motivated by performance and the enterprise retains its own recruits.

Advantages from the enterprise perspective
Model 2: Course with extended practical component (Bachelor/Master)

- Securing of highly qualified, performance-motivated recruits at an early stage,
- Productive and responsible work by the young people within the enterprise while they are still studying. No need for company induction period at the end of the course,
- Teaching of important key competencies to the students in their practical work,
- Extensive familiarization period – there is sufficient time to determine the optimum area of employment for the future graduates,
- Students or graduates exhibit strong loyalty to their enterprise,
- Generally, graduates within the dual system have twice as much practical and in-company experience as conventional graduates – and this is accompanied by an equal level of higher education,
- Intensive contact between enterprises and universities, extension of the technology and knowledge transfer,
- Also suitable for recruits who have already completed an apprenticeship and who wish to complete a course of study –> the enterprise retains its recruits.

Figure 1 to 5 – Chapter 1.6



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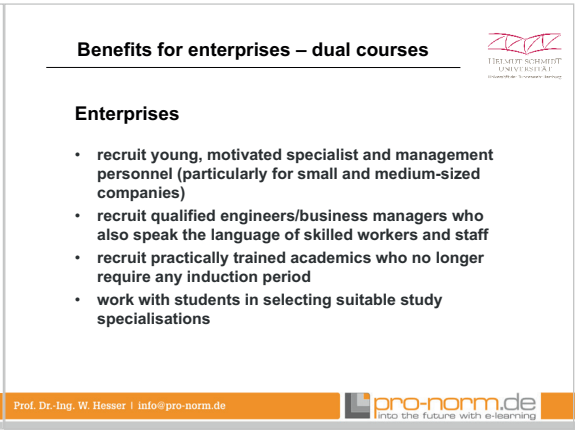


Fig. 2

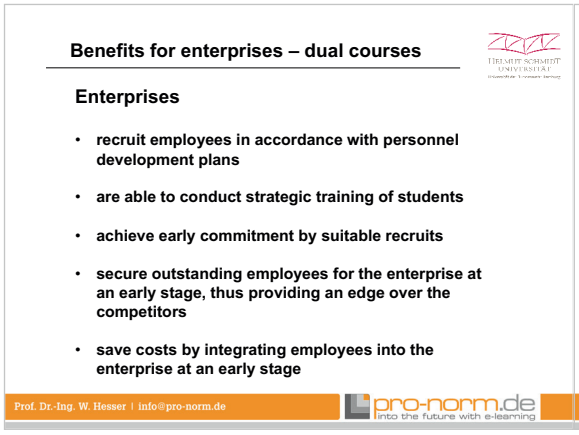


Fig. 3

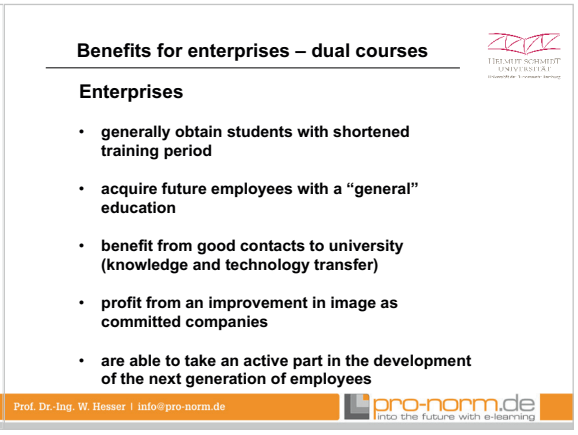


Fig. 4

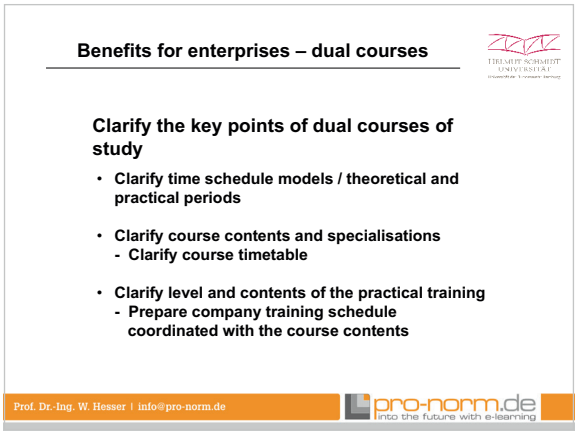


Fig. 5

1.7 Legal framework – dual higher education study

In the Federal Republic of Germany, control over education is the responsibility of the federal states. Consequently, the legal form of the educational establishment, its organisation and finance is not organised uniformly in the Federal Republic of Germany. In a first step, we can distinguish between state-organised, state-recognised and private educational establishments.

We can make further distinctions between educational establishments in relation to dual higher education, i.e.:

1. Fachhochschulen (universities of applied sciences), into the faculties and course subjects of which dual-system students have been integrated.
2. Duale Hochschulen (cooperative state universities) and Berufsakademien (colleges of advanced vocational studies) with an exclusively dual form of study
3. Fachhochschulen (universities of applied sciences) with autonomous/independent dual faculties offering dual courses exclusively, i.e. serving dual-system students only.[15]

A few examples here are intended to illustrate the differences.

Re 1: Fachhochschulen (universities of applied sciences), into the faculties and course subjects of which dual-system students have been integrated.

Dual higher education in Rhineland-Palatinate
The Duale Hochschule Rheinland-Pfalz [Rhineland-Palatinate Cooperative State University] was founded in autumn 2008 as a **service facility** for the state, belonging to the Ministry of Science, and is intended to provide information and networking for all parties interested in dual higher education in Rhineland-Palatinate and the relevant stakeholders, such as higher education institutions, enterprises, associations and organisations of businesses and social partners, career and educational advisers, prospective trainees and students, parents and teachers.

Dual higher education in Rhineland-Palatinate is laid down in the Higher Education Act of the State of Rhineland-Palatinate:

HochSchG RLP, § 19, Courses of study, Para. 5:

(5) The Fachhochschulen (universities of applied science) shall set up courses of study into which is integrated a professional apprenticeship or a professional internship taking its place and which are characterised by an alternation between study and practical phases (dual courses of higher education). Persons who have acquired the school-based part of the Fachhochschule entry qualification may take up a course of higher education at a Fachhochschule; the registration expires if the professional apprenticeship or the professional internship in its place is terminated without success. In addition, the Fachhochschulen shall set up in-service courses of study and courses of study integrating employment.

15 cf. Chapter 2 "The organisation of a dual course of study and its various structural features"

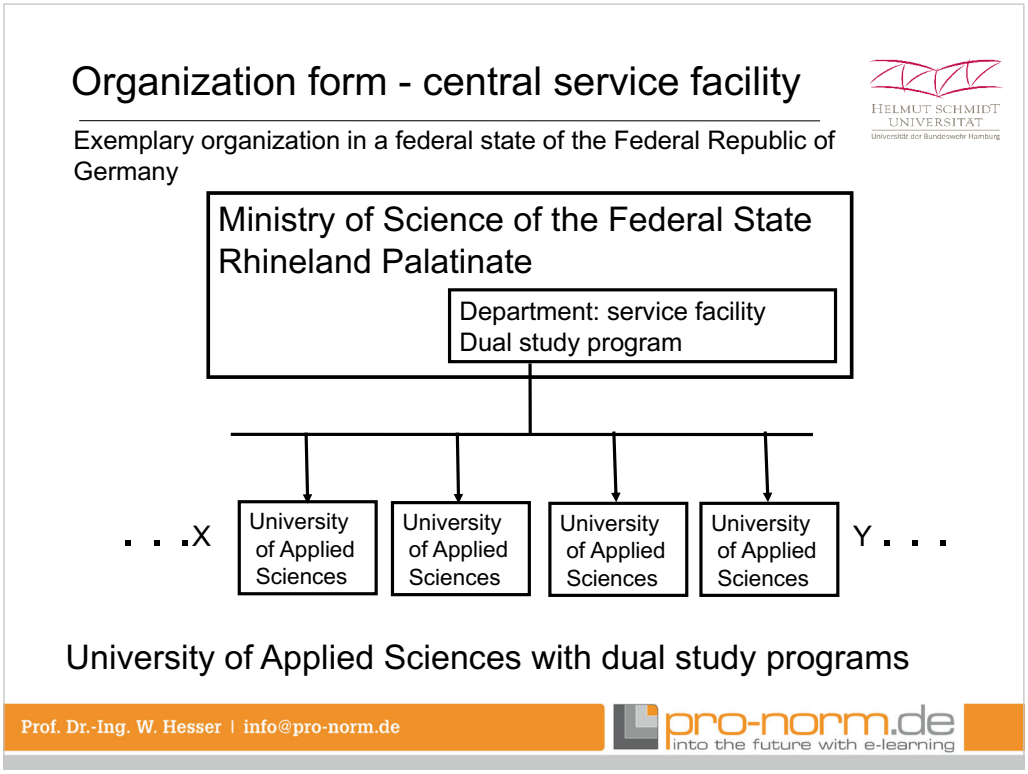


Fig. 5 – Chapter 1.7

The State Commission for Dual Courses of Higher Education is defined in terms of composition and function in the State Higher Education Act under Section 78, State commission for dual courses of higher education:

(1) A State Commission for Dual Higher Education Courses shall be formed comprising ten members connected with the state, ten members from enterprises, three members from trades unions and three student members. Members are delegated for a period of three years. The members representing the state comprise one professor from each of the seven Fachhochschulen along with three members from the technically responsible ministry, with one of them representing the business section of the ministry responsible for schools and tuition. The members representing the enterprises are delegated by the chambers of industry and commerce as well as the chamber of handicrafts, the chamber of engineers in Rhineland-Palatinate and the chamber of architects; the trades unions delegate their three trades union members. The student members are delegated by the student union conference for the state. Higher education institutions, as defined by Section 1 Para. 5 No. 1, can each delegate one member in an advisory capacity. The State Commission can form committees to prepare its decisions. Persons who are not members of the State Commission may also take part in the committees. The committees shall consult the professional chambers affected by the subject matter.

(2) The State Commission has the task of giving recommendations to the Fachhochschulen for the establishment and organisation of the dual higher education courses as well as any modifications to such courses. The senates shall be solely responsible for passing the resolution in accordance with Section 76 Para 2 No. 13 on the basis of proposals from the affected faculty boards in each case. If the senates wish to derogate from the recommendations of the State Commission in their resolutions, they shall consult and reach an agreement with the State Commission.

Rhineland-Palatinate (RLP) has 7 state-organised Fachhochschulen, some with campuses at different locations.

Re 2: Duale Hochschulen (cooperative state universities) and Berufsakademien (colleges of advanced vocational studies) with an exclusively dual form of study

Duale Hochschule Baden-Württemberg (DHBW) – Baden Wuerttemberg Cooperative State University

In Germany, the historically evolved colleges of advanced vocational studies, have developed differing structures according to the individual state. In Baden-Württemberg and Thuringia, the cooperative state universities (Duale Hochschulen) exist as independent higher education establishments.

In the year 2009, a decisive step took place in the state of Baden-Württemberg, which involved the state government transferring all colleges of advanced vocational studies to a newly created Baden-Wuerttemberg Cooperative State University (Duale Hochschule Baden-Württemberg – DHBW). With the foundation of the state-organised Baden-Wuerttemberg Cooperative State University (DHBW), the graduates of the dual study courses receive the internationally recognised Bachelor degree.

The basis for this decision is the "Gesetz zur Errichtung der Dualen Hochschule Baden-Württemberg"[16], of 27 October 2011, the latest available version of the complete edition.

§ 1 Establishing the Baden-Wuerttemberg Cooperative State University

(1) The state of Baden-Württemberg establishes with effect from 1 March 2009 the Baden-Württemberg Cooperative State University headquartered in Stuttgart (Cooperative State University) as a legal entity under public law and at the same time an establishment of the state.

(2) The study academies pursuant to Section 76 Para 5 Sentence 1 of the State Higher Education Act (LHG) in the version applicable before the entry into force of Article 2 shall become legally dependent subunits of the Cooperative State University when said University is established. The Berufsakademien (colleges of advanced vocational studies) pursuant to the second chapter of the State Higher Education Act shall cease to exist in the version applicable before the entry into force of Article 2 on establishment of the Cooperative State University.

(3) The Cooperative State University shall assume the rights, obligations, responsibilities and powers of the federal state as the maintaining body for the

16 Act establishing the cooperative state university – DH-ErrichtG, dated 3 December 2008

Berufsakademien insofar as rights, obligations, responsibilities and powers are concerned for which the Cooperative State University may be the maintaining body in accordance with the State Education Act in the version applicable after the entry into force of Article 2.

In 13 paragraphs, the Act regulates the transition to the Baden-Wuerttemberg Cooperative State University (DHBW).

Included in these are, for example,

Section 2 Founding bodies of the Cooperative State University
Section 3 Members and persons connected with the Cooperative State University
Section 4 Technical committees, Commission for Quality Assurance
Section 5 Provisional central student representation of the Cooperative State University

Organisational structure of DHBW (see detailed description in Chapter 2)
The DHBW comprises nine locations and additionally three campuses in the state of Baden-Württemberg. The dual courses of study in the DHBW are generally – and if there is a sufficiently large number of dual-system students – also accredited as such.

Steering committee
According to the state higher education act (LHG), the steering committee is responsible for the operational management of the higher education institution. In addition, the steering committee is fundamentally responsible for all matters for which no other responsibility is explicitly defined in the LHG or the basic constitution of the higher education institution. In order to perform these tasks, the steering committee is allocated an administrative apparatus.

The steering committee comprises the **president**, the **secretary/chief finance officer** and two professors in an extramural function.

1) Board
2) Senate
3) Supervisory Board
4) State Rectors' Conference
5) Commission for Quality Assurance
6) Expert commissions
7) Evaluation Commission
8) Coordinators
9) External reviewers
10) Internal reviewers
11) External evaluation agency
12) External examiners and reviewers of the outside evaluator
13) Management of the study academy (Section 27b of LHG)
14) Academic senate and university council (Sections 27c and 27d of LHG)
15) Course managers (Section 27e LHG) and academic managers
16) Training partners (Section 9 (1) LHG) and cooperating establishments
17) Lecturers (Section 51a LHG)
18) Students

In 2016/2017 Baden-Wuerttemberg Cooperative State University (DHBW) had approx. 34,000 students, who study in 27 Bachelor courses with about 100 special focuses of study at nine locations and additionally three campuses. The number of cooperation partners in the sense of enterprises is stated as 9,000. The emphasis in the concept of study at the DHBW is on courses with an extended practical component.

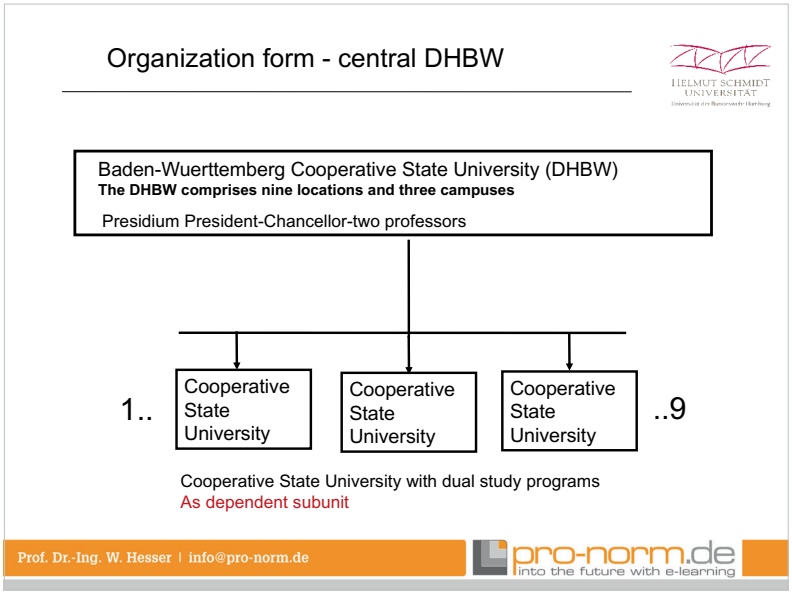


Fig. 6 – Chapter 1.7

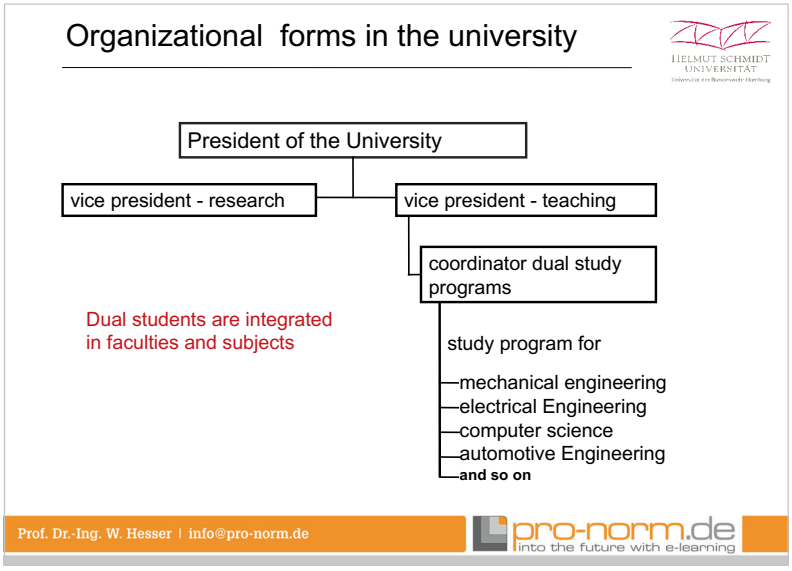


Fig. 7 – Chapter 1.7

Re 3: Fachhochschulen (universities of applied sciences) with autonomous/independent dual faculties offering dual courses exclusively, i.e. serving dual-system students only.

Hochschule für Wirtschaft und Recht in Berlin –
HWR (Berlin School of Economics and Law)

The first dual higher education courses were established in Berlin in 1993, with the foundation of the Berufsakademie Berlin (Berlin college of advanced vocational studies) as a new educational establishment for the state of Berlin. In 2003, the Berufsakademie was integrated in today's Berlin School of Economics and Law as the Department of Cooperative Studies. The legal foundations for the establishment and subsequent incorporation of the Berufsakademie are contained in the following laws

- Act governing the Berufsakademie Berlin (Berliner Berufsakademiegesetz – BBAG) from 10 June 1993
- Act governing the incorporation of the Berufsakademie Berlin into the Berlin School of Economics from 2 October 2003

The Department of Cooperative Studies exclusively offers dual higher education courses at Bachelor and Master level. The Berlin Higher Education Act (BerlHG) does not contain any special regulations relating to dual higher education programmes.

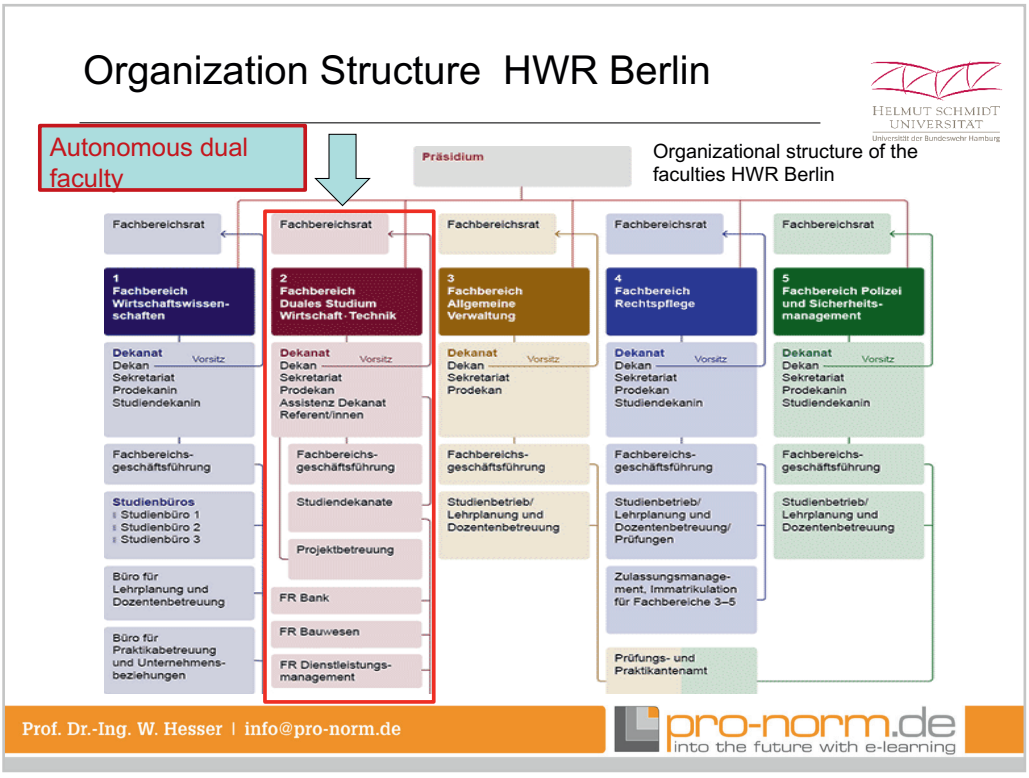


Fig. 8 – Chapter 1.7

Figure 1 to 8 – Chapter 1.7

Fig. 1

Fig. 2

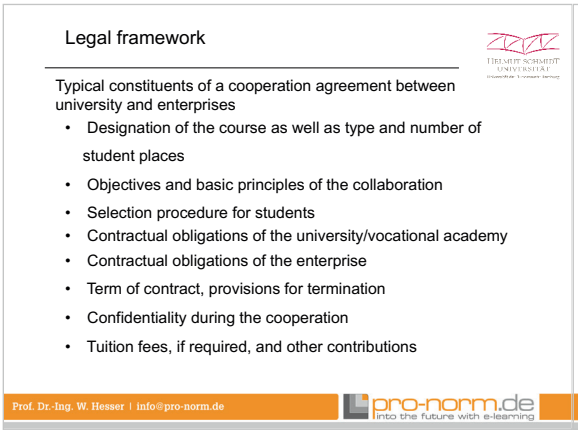


Fig. 3

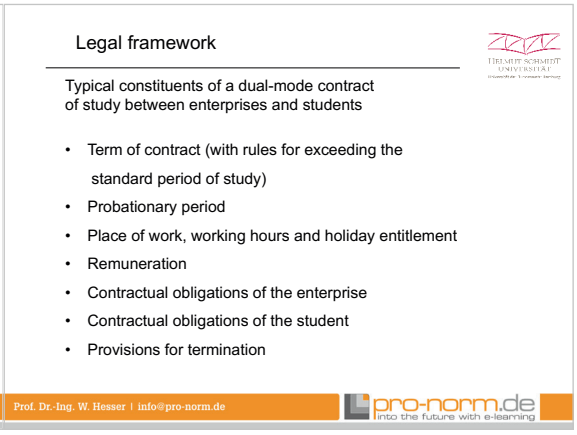


Fig. 4

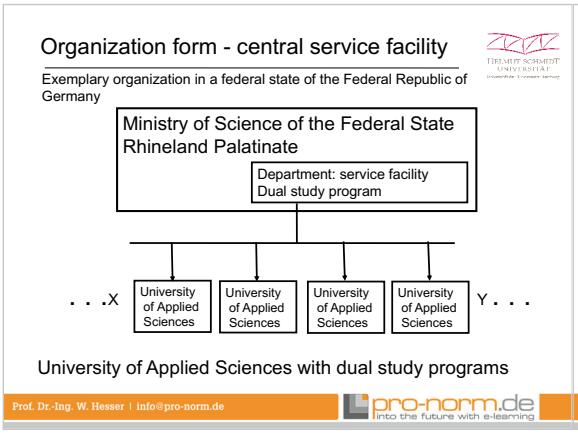


Fig. 5

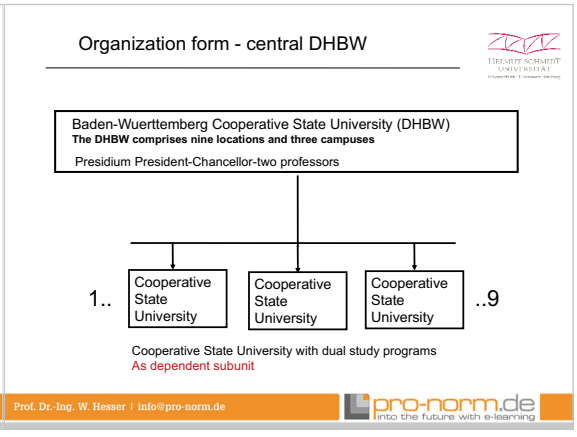
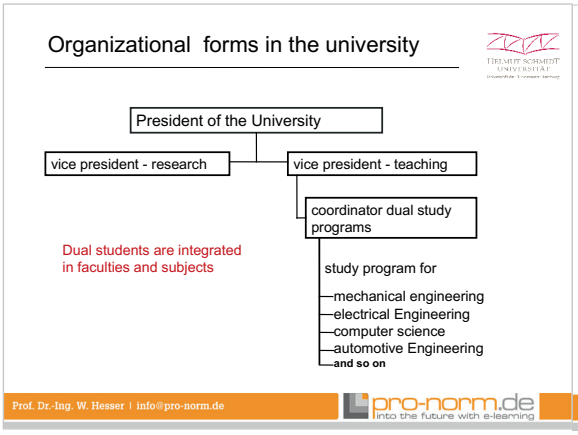


Fig. 6


Organizational forms in the university
President of the University
vice president - research
vice president - teaching
coordinator dual study programs
Dual students are integrated in faculties and subjects
study program for
mechanical engineering
electrical Engineering
computer science
automotive Engineering
and so on
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into the future with e-learning

Fig. 7

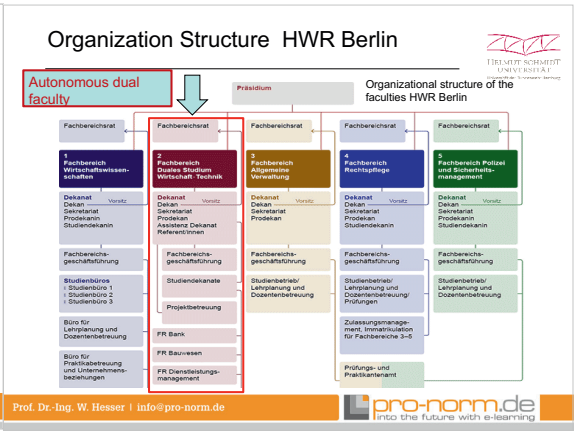
Organization Structure HWR Berlin
Autonomous dual faculty
Organizational structure of the faculties HWR Berlin
Präsidium
Fachbereichsrat
1 Fachbereich Wirtschaftswissen-schaften
2 Fachbereich Duales Studium Wirtschaft Technik
3 Fachbereich Allgemeine Verwaltung
4 Fachbereich Rechtspflege
5 Fachbereich Polizei und Sicherheits-management
Dekanat
Dekan
Sekretariat
Prodekan
Studiendekanin
Vorsitz
Fachbereichs-geschäftsführung
Studienbüros
Studienbüro 1
Studienbüro 2
Studienbüro 3
Büro für Lehrplanung und Dozentenbetreuung
Büro für Praktikabetreuung und Unternehmens-beziehungen
Assistenz Dekanat
Referent/innen
Studiendekanate
Projektbetreuung
FR Bank
FR Bauwesen
FR Dienstleistungs-management
Studienbetrieb/ Lehrplanung und Dozentenbetreuung
Studienbetrieb/ Lehrplanung und Dozentenbetreuung/ Prüfungen
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Fig. 8

1.8 Recommendations by the German Council of Science and Humanities on dual higher education study

In brief form, this Section presents the "Recommendations on the development of dual higher education study", policy paper of the German Council of Science and Humanities (WR) 2013 and Guidance from the working group on "courses with special profile requirements" (Accreditation Council from 10 December 2010)].[17]

1 Relationship of the learning venues

This dimension addresses the extent to which the learning venues are interlinked in terms of subject matter, time scheduling and institutional aspects. It also expresses the fact that practical professional and academic elements represent equivalent parts of the dual higher education programme. Features of an ideally designed dual higher education programme include regular cooperation projects, reciprocal visits of the supervisors from university and practice partner, supervision of students in the practical phases by teaching personnel as well as joint committees of educational establishment and practical partners. Examples of issues addressed in the committees might include "coordination of the curricula and learning objectives, identifying and resolving organisational problems and incongruence in the teaching contents".[18] Consequently, not only is cooperation between learning venues intended to guarantee a smooth procedure, but also the connection between the theoretical education and the practical training is intended to promote a specific skill profile for the students.[19]

In our opinion, implementation of the WR's recommendations (2013) relating to learning venue cooperation within the context of accreditation can only be achieved by means of a documented supervision and training concept, which ensures that there is proof of functioning information and communication structures on the side of the educational establishments and on the side of the enterprises and at the same applies as a prerequisite for the accreditation of a course of study. The would correspond approximately to the demand of the Accreditation Council: "If the higher education institution provides for the recognition of achievements performed outside of the institution, corresponding rules of recognition shall be specified. The competences necessary for the recognition shall be determined in a suitable manner for each case."[20]

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17 The German Council of Science and Humanities (WR) is the advisory body for academic policy in Germany. It provides advice to the German Federal Government and the State (Länder) Governments on the further development of content and structure within the higher education system and on the state funding of research establishments. The WR is funded by the federal government and the governments of the Länder. de.wikipedia.org/wiki/Wissenschaftsrat, Retrieved in June 2017. The Accreditation Council is the main decision-making body of the Foundation for the Accreditation of Study Programmes in Germany.. It decides on the accreditation and reaccreditation of accreditation agencies, specifies the quality requirements for the accreditation of courses, internal quality assurance systems at higher education institutions and agencies and also monitors the accreditations awarded by these agencies. www.akkreditierungsrat.de/index.php?id=akkreditierungsrat&L=0&contrast=title%3Daccreditation; Retrieved in June 2017

18 WR 2013: 26

19 Accreditation Council 2010: 3

20 Accreditation Council 2010: 7

2 Academic standard

This dimension is primarily concerned with ensuring that the practical relevance of the higher education programme does not have an adverse effect on the academic education. "In specific terms, this affects the duration and intensity of the theory phases, the scope of and requirements for pieces of academic work prepared during and at the end of the course as well as the content, format and evaluation of examination outcomes and the recruitment and composition of the academic staff."[21] The claim to academic rigour for a dual course of study proves to be somewhat more complicated; at least, however, more complex than that of a purely full-time course of study at a university. One reason for this lies in the fact that dual higher education is embedded in two European educational restructuring processes. While the Bologna Process refers to the higher education system and has already been dealt with briefly on numerous occasions[22], the Copenhagen Process targets the modernisation of vocational education and training systems. One consequence of the Copenhagen process was the idea of the European Qualifications Framework for lifelong learning (EQF), which may be seen as a qualifications system "that compares the learning outcomes of vocational education with those of higher education and makes the competencies, qualifications or certificates acquired transparent for the European and international labour market".[23]

With a view towards accreditation practice, consideration of our own empirical findings forces us to ask what is being certified under the aspect of academic rigour in some cases. The WR, for instance, formulates clear recommendations with reference to the teaching staff, namely that efforts should be made "to perform the predominant part of the teaching in a dual course of study with full-time teaching personnel, who in general will have a postgraduate qualification".[24] In the case of the Accreditation Council (2010), this is formulated as follows: "The proportion of tuition performed by full-time teaching personnel that fulfil the employment requirements for professors shall not fall below 40%."

3 Design of the practical context

The curricular design of the practical components as a quality attribute in dual higher education is at the focus of this dimension. For courses integrating work experience in particular, the WR recommends establishing quality assurance measures for the practical learning venue of the enterprise that "at least record the practical training contents and their connections to the academic modules (module manual of the university), the type of supervision and the training and qualification of the supervisors on the practical side".[25]

The WR further proposes that the curricular design of the practical components and their learning objectives should be clearly formulated in consultation with the academic learning venue and "defined methods of practical knowledge transfer" be applied in order to "safeguard the level of study contents with the practical partner"[26]

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21 WR 2013: 29
22 Cf. Chapter 13, for example
23 Ratermann and Mill 2015: 97
24 WR 2013: 29f.
25 WR 2013: 32
26 WR 2013: 32

4 Services to be provided by the practical partner
This dimension primarily shows in what form and with what prospects the students are incorporated into the enterprises or establishments. This includes the type of employment relationship including the regulations on remuneration, social security contributions and the like, guarantees of continued employment or obligations on the student to remain with the enterprise after training as well as the option of completing the practical phases in different enterprises or at different locations of a company or establishment. As a secondary aspect, the services to be provided by the practical partner relating to the university can also be listed here.

5 Support services by the universities
This dimension describes the specific offerings of higher education beyond the communication of subject-related learning matter, be they in the field of supervisory infrastructures, the specific interlinking elements such as modules reflecting on the practical content or independent offers for dual-system students such as advice centres and/or events.

6 Costs and finance
This dimension is intended to show whether fees are incurred by the students (in the case of private universities or further education courses) and whether and to what extent the enterprises contribute financially to the courses of study.

A decisive criterion in defining a higher education programme as a dual course of study is that it should fulfil the minimum requirements for the quality-relevant dimensions 1 to 3.[27]

The WR recommends that the Accreditation Council and the accreditation agencies should take appropriate account of the quality-relevant dimensions for dual higher education programmes (in particular 1 to 3) in the accreditation guidelines and in accreditation practice.

27 WR 2013: 26, see B.II

Figure 1 to 11 – Chapter 1.8

Recommendations of the German Council of Science and Humanities

Recommendations of the German Council of Science and Humanities

on the dual of study in Germany

The Council of Science and Humanites is the advisory body to the Federal Government and the governments of the federal states

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Fig. 1

Recommendations of the German Council of Science and Humanities

Constant innovation in the world of work is causing an increasing demand for qualification of employees

Within companies there is a high demand for the transfer of
-Theoretical expertise for complex requirements
-Practical vocational experience

Dual courses link theory and practice at two learning venues
-University
-Enterprise

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Fig. 2

Recommendations of the German Council of Science and Humanities

Übersicht 1 Klassifizierung bestehender Studienformate

Individueller Bildungsabschnitt		Beziehung der Lernorte: interlinked	Beziehung der Lernorte: parallel
initial education	mit Berufsausbildung	Vocational training (Bachelor)	ausbildungsbegleitend (Bachelor)
initial education	mit Praxisanteilen	practice-integrated (Bachelor) gestalteter Ausbildungsanteil beim Praxispartner	praxisbegleitend (Bachelor an FH oder Uni) mit obligatorischen Praktika in Unternehmen
Weiterbildung	mit Berufstätigkeit	berufsintegrierend (Master/Bachelor) mit gestalteten Bezugnahmen	berufsbegleitend/berufsintegrierend (Master/Bachelor) ohne gestaltete Bezugnahmen
Weiterbildung	mit Praxisanteilen	praxisintegrierend (Master/Bachelor)	praxisbegleitend mit Praktika oder praktischen Anteilen (Master/Bachelor) ohne gestaltete Bezugnahmen

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Fig. 3

Recommendations of the German Council of Science and Humanities

Course with integrated vocational training: An apprenticeship is systematically included in the course structure.
There is a structural and institutional connection between study and vocational training (on an organisational level, through contact between university/vocational academy, practical training partners and possibly also vocational schools/technical colleges) as well as by counting parts of the vocational training towards the course achievements.

Course with integrated practice: Practical parts are systematically included into the course and to a
greater extent than in standard courses with obligatory internships, and the practical parts are structurally and institutionally interlinked with the course as a minimum requirement (on an organisational level, through contact
between university/vocational academy and practical partner). The practical sections count towards the course achievements.

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Fig. 4

Interface between the learning venues

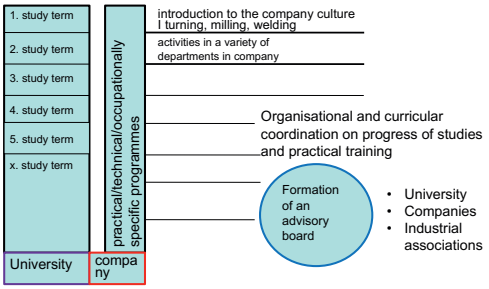

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Fig. 5

Minimum requirements

Minimum requirements – dual studies

- Academic and practical professional elements form equivalent parts
- Duality is the connection and coordination of two learning venues
- An academic or science-related and an integrative course is a key feature of duality

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Fig. 6

Profile of dual courses

Profile of dual courses
is determined by six dimensions:

1. Relationship of the learning venues
1. Academic standard
1. Design of the practical context
1. Services by the practice partner (enterprise)
1. Support services by the universities
   e.g. support infrastructure for students
6. Costs and finance
   e.g. tuition fees, financial involvement of the enterprises

Fig. 7

Quality assurance of dual courses

Quality assurance – Course of study

- Structural linking of learning venues; coordination of the curricula and practical vocational training
- Recruitment and composition of the teaching staff
- Introduction of a reporting function
- Regular dialogue between the responsible parties on the academic and practical sides
- Establishment of a centre for dual-mode study
- Participation of the enterprises in financing the dual study
- Freedom of teaching and research

Fig. 8

Quality assurance of dual courses

Quality assurance – practical learning venue

- Define practical vocational training contents in writing
- Create connections to the academic modules
- Agree on defined methods of practical knowledge transfer
- Agree on type of supervision (Supervision agreement)
- Agree on qualifications of the supervisors

Fig. 9

Dual Master courses

A dual Master course must include a practical phase or a training programme in the curriculum as part of the course work

At present there are very few Master courses!

Fig. 10

Financing of dual courses

Finance

- Recommendation of basic involvement by the enterprises
- Participation on the infrastructure (advisory board, selection procedure for students
- Better equipment for the university
- Higher quality of teaching personnel
- Smaller study groups

Fig. 11

2 The organisation of a dual course of study and its various structural features

2.1 Cooperative state universities, variations in structure and organization

The autonomy of the Länder[1] in cultural and education matters in German federalism results from the regulation of powers in the Basic Law (GG) for the Federal Republic of Germany (Article 30). *Educational independence* as part of this autonomy in cultural and education matters is the responsibility of the länder, which is the reason for the lack of uniformity in the legal structure and organisation of dual higher education in the Federal Republic of Germany.

Cooperative state universities in Germany have been organised in different ways. In Baden-Württemberg and Thuringia, for example, the cooperative state universities (Duale Hochschulen) exist as independent higher education establishments.

Bavaria and Rhineland-Palatinate, for instance, have integrated dual courses of study into the existing higher education institutions, with their infrastructure, their areas of expertise and contacts integrated within the regional economy and have entrusted the higher education institutions with their university autonomy to set up dual higher education programmes jointly with partners/enterprises from the regional economy to match the higher education institution itself and the needs of the region.

2.2 Infrastructure of organisations in the dual system of study

The infrastructure of a higher education institution covers all the facilities of an institutional nature that guarantee the functioning of a higher education institution or of a dual course of study.

A functioning infrastructure at a higher education institution is a prerequisite for the success of a dual higher education course. A distinction can be made between different study models within the educational establishments according to the complexity of the infrastructure.

We make the following distinction between educational establishments:

1. Fachhochschulen (universities of applied sciences), into the faculties and course subjects of which dual-system students have been integrated.

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1 "Land" (and its plural = "Länder"), also "Bundesland", is the German word for (federal) state, as in the sixteen states that make up the modern Federal Republic of Germany (Bundesrepublik Deutschland). The states retain a certain measure of sovereignty, such as in matters relating to culture and education. For reasons of clarity and due to the wording in some of the official translations that appear in this book, the words "land" or "länder" have therefore sometimes been used instead of (federal) state(s).

2. Duale Hochschulen (cooperative state universities) and Berufsakademien (colleges of advanced vocational studies) with an exclusively dual form of study.
3. Fachhochschulen (universities of applied sciences) with autonomous/ independent dual faculties offering dual courses exclusively, i.e. serving dual-system students only.

In Germany overall there are 428 higher education institutions with 2,807,010 students, of which 217 higher education institutions (50.7%) offer dual courses of study[2] with a total of 92,467 (3.29%) dual-system students, of whom 34,034 students study at the Baden-Wuerttemberg Cooperative State University (DHBW) at nine locations.

The universities of applied sciences and cooperative state universities do not have the right to award postgraduate degrees and post-doctoral lecturing qualifications.

Due to the diversity of higher education institutions with dual courses of study and their multifarious infrastructures, a few examples will be given here to reduce their complexity to the essential structural features.

Example A – Fachhochschule (University of Applied Sciences)

- only one course of study,
- 20 to 80 dual-system students und
- 10 to 27 enterprises.

The infrastructure covers the following functions
- Management,
- Coordination,
- Study supervision.

The **Management function** covers coordination of the dual courses of study in relation to the cooperation with the chambers of handicrafts and chambers of industry and commerce. It also covers supervision of the dual-system students, particularly with relation to their learning achievements. Additional tasks may include:
- Responsibility for finance (if a tuition fee is levied which is invested in activities, seminars, tutorials for the students),
- Higher-level coordination with the university steering committee and the relevant faculties,
- Representation to the outside (at trade fairs, etc.).

The **Coordination function** mainly comprises:
- Administration for the students (documentation in a database, preparing statistics, etc.),

2 Statistisches Bundesamt (Federal Statistics Office); Studierende im dualen Studium*) im Wintersemester 2015/2017 nach Hochschulen [Students in dual higher education *) in the winter semester 2015/2016 by higher education institutions]

- Financial administration,
- Interface management (university – cooperation partners – students),
- Communication with enterprises and students: direct contact (advice), newsletters, Intranet,
- Acquisition of students: support in tendering and applications, trade fair appearances, school visits,
- Acquisition of enterprises: various marketing activities (direct acquisition, mail-outs, etc.), visits to industrial trade fairs, advising new partners (e.g. contracts),
- Close cooperation with the respective organisations: course guidance, examinations office, language centre, admissions office,
- Organisation of the enterprise forums,
- Organisation of seminars for soft skills and specific subjects,
- Organisation of the course progress interviews,
- Organisation of the tutorials,
- Organisation of the network of information and advice offices through joint activities: visits to enterprises, excursions and festivals.

The **Study supervision function** refers to the supervision of students in the respective courses of study. This function is frequently performed by lecturers who offer one consultation session per week or invite the students in the dual system to a "round table" once a month. Additional tasks may include:

- Multiple meetings with students experiencing difficulties with their subjects,
- Asking subject supervisors to take part in the networking activities (e.g. organise festivals or enterprise forums),
- Combining support for the students in practical and theoretical work,
- Organising and supervising possible collaboration on technical projects with the respective enterprises (if required),
- Supervision and advice for theses.

Example B – Fachhochschule (University of Applied Sciences)

- 10 dual courses of study,
- approx. 1,050 dual-system students und
- approx. 240 enterprises.

The infrastructure covers the following functions

- Management, Vice-President for Studies and Teaching/Vice-President for Technology Transfer,
- Coordination,
- Course management.

The **Management function**, Vice-President for Technology Transfer includes support for the Principal in all issues of research, technology transfer, collaboration with enterprises, patent matters, external funding, project initiations in the busi-

ness sector as well as cooperation agreements and the founding of affiliated insitutes.

The **Management function**, Vice-President for Studies and Teaching, includes support for the Principal in all issues concerning studies and teaching, in particular existing courses of study, the creation of new courses, accreditation, evaluation, quality control, course guidance and the International Office
The **Coordination function** mainly comprises:

- anagement of existing cooperation partners,
- Interface management (university – cooperation partners – students),
- Interface management (faculties, administration, university management),
- Advice on contracts (university, students, enterprises),
- Networking with regional and nationwide organisations,
- Communication with enterprises and students: Direct contact (counselling), newsletters, social media, Intranet and Internet,
- Communication with the chamber of handicrafts and chamber of industry and commerce including vocational schools,
- Marketing and PR work.

Acquisition of students:

- Support in tendering and application procedures,
- Participation in trade fairs, study and education fairs as well as advisory events in schools,
- Running of information events for school students and enterprises,
- Further development on new dual courses of study,
- Support in the accreditation of new courses of study.

The **Course Management/Person Responsible for Courses function** covers the responsibility for the respective dual course of study:

- Responsibility for the running and organisation of the courses,
- Responsibility for the module description (contents for the curriculum),
- Supervision and counselling of students,
- Organisation of the course progress interviews, course schedule,
- Evaluation of the dual courses of study,
- Accreditation and reaccreditation of courses.

Example C – Fachhochschule (University of Applied Sciences)

- 12 dual courses of study,
- approx. 1000 dual-system students and
- approx. 200 enterprises.

The infrastructure covers the following functions

- Dean of Faculty,
- Course management,
- Expert team on dual higher education studies,

- Steering group of expert team on dual higher education studies (5 course managers).

The **function of Dean** involves:
- Overall responsibility for all courses of study within the faculty,
- Overall responsibility for faculty: Organisation, Dean's office, teaching, research.

The **Course Management function** covers the responsibility for the respective dual course of study:
- Responsibility for the module description (contents for the curriculum),
- Counselling and supervision of students,
- Supervision and counselling of enterprises,
- Representation to the outside such as at trade fairs, press conferences.

The **function of Expert Team** on dual higher education studies mainly comprises:
- Coordination between the course managers, enterprises, school students in the sense of matching (bringing them together),
- Interface management (higher education institution – cooperation partners – enterprises),
- Interface management (faculties, higher education institution management),
- Advice on the framework agreement (students, enterprises).

Communication with enterprises and students:
- Direct contact (counselling), newsletters, Internet, information events,
- Communication with the chamber of handicrafts and chamber of industry and commerce including vocational schools.

Acquisition of students:
- Support in tendering and application procedures,
- Organisation of meetings with enterprises,
- Overriding establishment within the department for university communication (administration).

The **function of Steering Group for the expert team** on dual higher education studies consists of five course managers and one member of the steering committee and is responsible for:
- Strategic management (measures, budget, etc.),
- Shaping of opinions/exchange of opinions,
- Feedback to steering committee.

Example D – Cooperative state university

- 27 Bachelor courses with about 100 special focuses of study,
- approx. 34,000 dual-system students,
- approx. 9,000 enterprises,
- 9 locations and 3 campuses.

The infrastructure covers the following functions
Steering committee
According to the state higher education act (LHG), the steering committee is responsible for the operational management of the higher education institution. In addition, the steering committee is fundamentally responsible for all matters for which no other responsibility is explicitly defined in the LHG or the basic constitution of the higher education institution. In order to perform these tasks, the steering committee is allocated an administrative apparatus.

The steering committee comprises the **president**, the **secretary/chief finance officer** and two professors in an extramural function:

Committees and players
The following brief presentation of the committees and players is intended merely for guidance.

1) Board
The Board manages the higher education institution. One of its essential tasks is to continuously evaluate and improve the structures and performance processes by setting up and utilising a quality management system. The Board is responsible for enforcing the recommendations of the Commission for Quality Assurance (QSK) and the expert commissions.

2) Senate
The Senate decides in matters of research, teaching, learning and dual higher education including steering measures where these are not allocated to other bodies. On the basis of the recommendations from the expert commissions, it decides in particular on examination regulations, course contents and training guidelines. The Senate delivers statements on the overarching structural and development planning aggregated from the structural development plans of the locations.

3) Supervisory Board
According to the state higher education act, the Supervisory Board bears the responsibility for the development of the university and proposes measures intended to develop the profile and raise performance and competitiveness.

4) State Rectors' Conference
In addition to the committees defined in the basic constitution, the Rectors' Conference meets at regular intervals. Members of the Rectors' Conference included the Chairman of the Board as well as the Rectors of the study academies. The vice-rectors of the study academies and the members of the Board can take part in the meetings. The Rectors' Conference is also an important information platform; key measures are communicated here and passed on to the locations by the rectors.

5) Commission for Quality Assurance
The Commission for Quality Assurance (QSK) advises the bodies of the universities and study academies on issues concerning the quality of the study programme, the practical training and the theory/practice transfers. The results of

the internal evaluation and the feedback reports from the evaluation commission, the external reviewers and the outside evaluator are appraised by the QSK.

6) Expert commissions
The expert commissions are responsible for the cross-venue technical matters of the fields of study established at the university and their courses. Key tasks of the expert commissions are the inspection and establishment of new study programmes and further development of the curricula.

7) Evaluation Commission
At the start of the annual quality cycle, the Evaluation Commission has the responsibility for planning the quality assurance process as well as the specification of random testing (locations and examination areas) for evaluating the examinations of the Bachelor courses. At the end of the evaluation period, it summarises the results, evaluates them and then derives initial recommendations for action.

In addition, the following are designated and described in detail:
8) Coordinators,
9) External reviewers,
10) Internal reviewers,
11) External evaluation agency,
12) External examiners and reviewers of the outside evaluator,
13) Management of the study academy,
14) Academic senate and university council,
15) Course managers and academic managers,
16) Training partners and cooperating establishments,
17) Lecturers,
18) Students.

Example E – Fachhochschule (University of applied sciences) with autonomous/independent dual faculty

- 7 Bachelor courses / 16 subject areas,
- approx. 2,100 dual-system students,
- approx. 700 enterprises.

The infrastructure covers the following functions
The infrastructure of dual higher education courses must not only encompass the learning venue of higher education institution but also extend to that of cooperating enterprise. This is where its particular challenge lies. It embodies the personnel and organisational aspects and utilises suitable networking instruments.

Human resources element:

Department head model
Organisation of the study programmes takes place decentrally in what are called subject specialisations. Every subject specialisation is run by a professor from the

subject area as a department head. In addition to the classical tasks of a course manager, the tasks of the department head extend to acquiring and supervising the cooperation partners from business and administration, advising the supervisors in the enterprises, recruiting and integrating part-time lecturers as well as individual advice on the subject of study for students during the organisation of their practice phases. To perform these tasks, department heads receive a reduction in their teaching load that extends beyond the usual reductions granted to course managers.

Subject specialisation offices
The subject specialisation offices are where most tasks resulting from organising the studies are pooled and allocated for management by specific personnel on a decentralised level. This provides a clearly identifiable and personally approachable point of contact for both students and training partners in all issues of running the dual higher education programme.

Supervisors and mentors in the enterprises
Supervisors and mentors in the enterprises with a clearly defined training requirement are appointed on the side of the training partner for every student. They take charge of supervising the students and the specific deployment planning during the practice phases and are available as points of contacts for the department heads.

Organisational elements:

The dual model of study for Department 2 of the Berlin School of Economics and Law (HWR) is based on the fundamental principle of a cooperation partnership between higher education institution and enterprise. This cooperation partnership is institutionalised on three levels of hierarchy:

Training manager meetings
Für jedes duale Studienprogramm finden ein- bis zweimal jährlich von den jeweils verantwortlichen Fachleiterinnen bzw. Fachleitern organisierte Austauschrunden statt, die der inhaltlichen Abstimmung der Theorie- und Praxisphasen zwischen Hochschule und Ausbildungspartnern dienen. Zu diesen Ausbildungsleitersitzungen werden alle betrieblichen Betreuer eingeladen.

Expert commissions
In the training areas of the Department (of Cooperative Studies) cross-subject expert commission meetings take place once per semester during which further development of the curricula for the study programmes takes place. The expert commissions are made up of professors from the department, representatives from in-company practice and students.

Dual Commission
The Dual Commission is the supreme body of the department. At a strategic level, it decides on the expansion, termination and development of dual higher education programmes. Apart from representatives of the higher education institution

and the training partners, its members also include representatives of employer associations, the chambers of industry and commerce as well as trades unions.

The following governing bodies supplement the dual organisational elements previously described.

Faculty Board
In accordance with the regulations of Section 71 of the Berlin Higher Education Act, the Faculty Board is particularly responsible for enacting statutes of the department, the orderly performance of teaching activities and examinations, decisions on appointment nominations and the distribution of resources and posts allocated to the department.

Academic Senate
Among other activities, the Academic Senate generates proposals for establishing, modifying and dissolving organisational units and courses, for laying down principles for teaching, studies and examinations, coordinating the activity of departments, and so on.

Advisory Board
The responsibilities of the Advisory Board include establishing, modifying and dissolving departments and other organisational units at the proposal of the Academic Senate as well as for commenting on plans for the development and the facilities of the higher education institution.

Other important structural elements to secure the curricular connections between theory and practice are:

Suitability principles
The "Principles for the suitability of training partners" define the requirements for new enterprises to become involved in dual higher education programmes (presentation of a proposal for the organisation of the practice phases in terms of content and timing, appointment of the persons responsible for supervision of students in the dual system, training and qualification of the enterprise-based supervisors, obligation of the training partners to release students for examination activities, etc.).

Standard training plans
The fundamentals of interconnection laid down in the suitability principles achieve concrete form in what are called "standard training plans". These plans describe the focal points of student deployments during the practice phases and establish the relations of the practice phases to the corresponding modules in the theory phases.

Detailed description of the practice transfer modules
The module catalogues of every programme of study contain precise descriptions of what are called practice transfer modules in which students and enter-

prise-based supervisors can find out what examination results are expected of them. In the first semester, the preparation of practice transfer reports proceeds via precisely defined assignments, in the higher semesters successful completion of the respective module involves developing complex study projects or an oral examination. Supervision of these modules on the part of the higher education institution lies in the hands of full-time teaching personnel in the department.

Learning Agreements

Apart from the higher education entrance qualification, the basis of every matriculation is a learning and training agreement concluded between the cooperating enterprise and student. This agreement makes reference to the previously mentioned suitability principles and ensures that a minimum remuneration is paid. These regulations are the foundation for a constantly high level of efficiency for the programme of studies.

2.3 Workshop description

The organisation of a dual course of study and its various structural features

Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective.

Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome.

The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of this workshop is to discuss the various organisational forms. It also intends to weigh up the advantages and disadvantages and to bring about a decision on the organisational form.

Sample procedure for a workshop:

- Discuss the advantages and disadvantages of the structure of independent and integrated organisation models (work in groups!).
- Discuss and design an infrastructure (work in groups!).
- Participants present the infrastructure (work in groups!).
- Discuss the necessary personnel requirements.
- Decide on the employee posts and provide a brief job description (5 lines).

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as text and photos

Working resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantity.

Figure 1 to 18 – Chapter 2

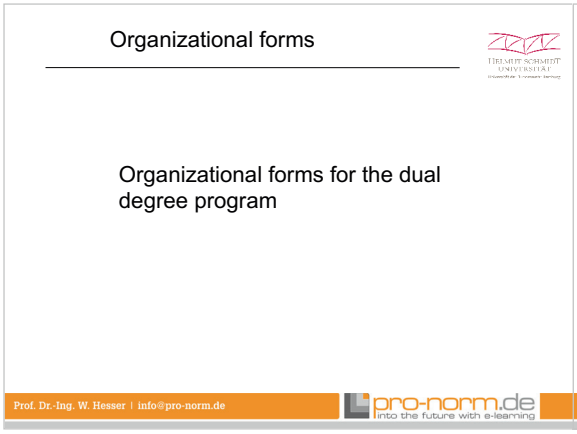


Fig. 1

Fig. 2

Fig. 3

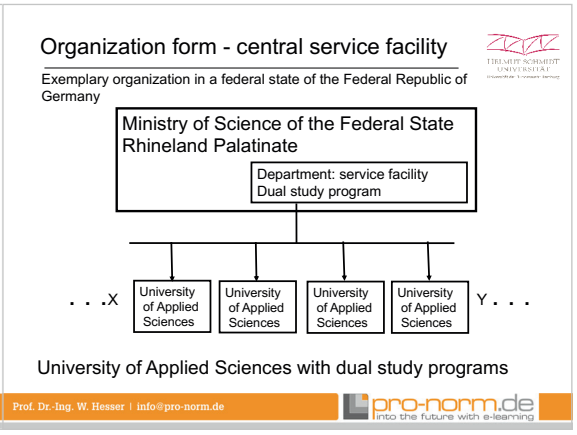


Fig. 4

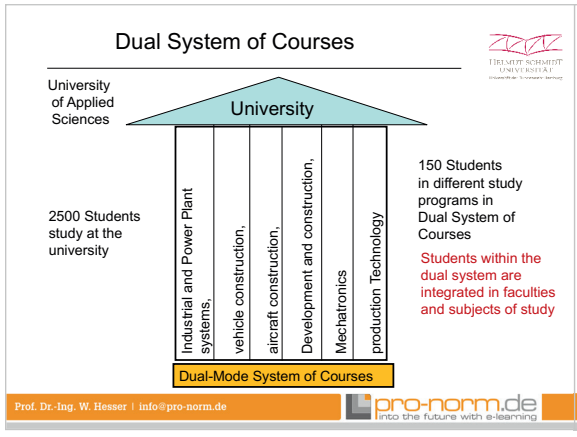


Fig. 5

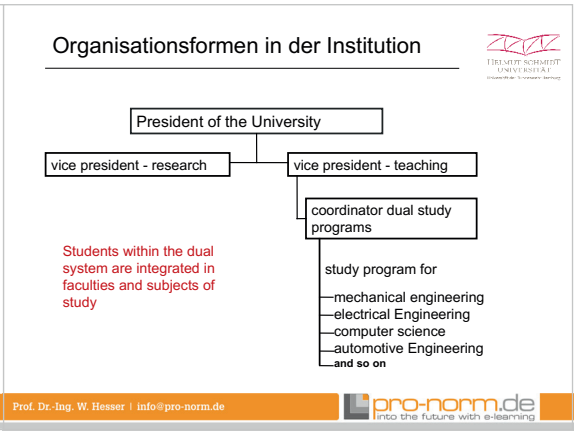
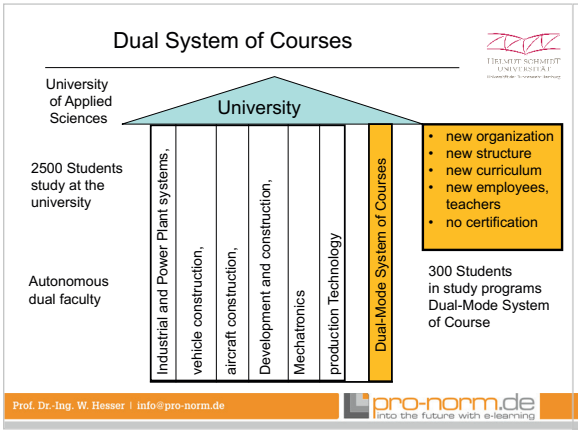


Fig. 6



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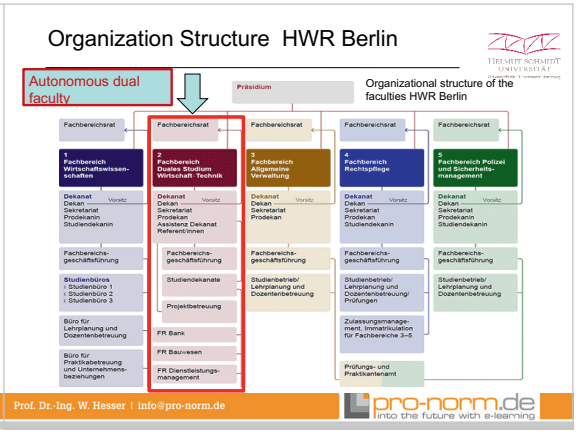

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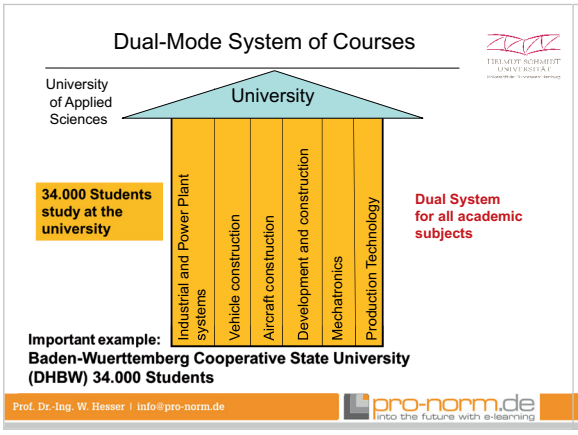

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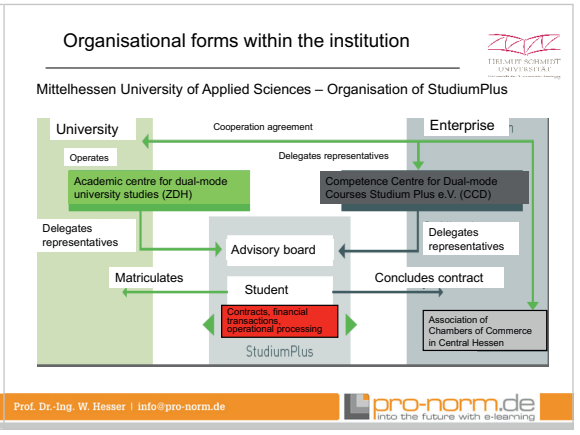
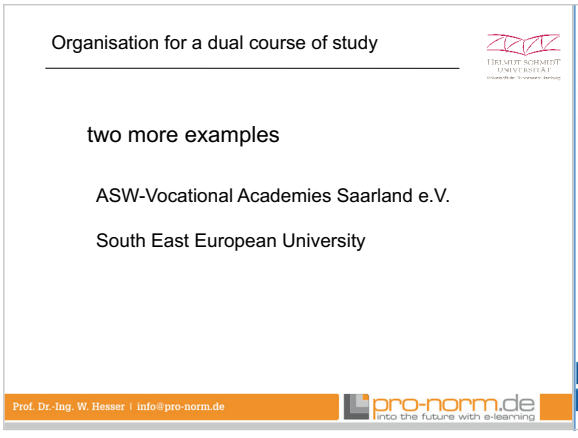


Fig. 10



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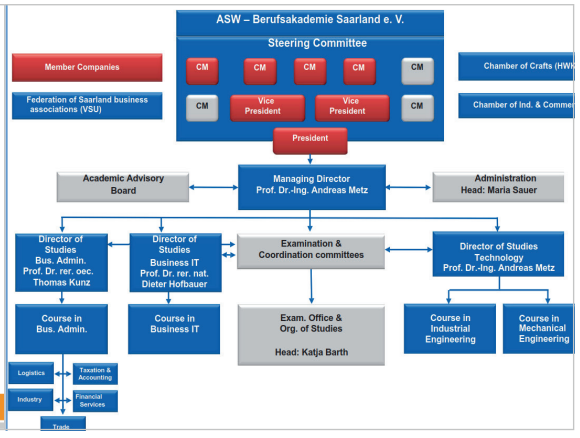

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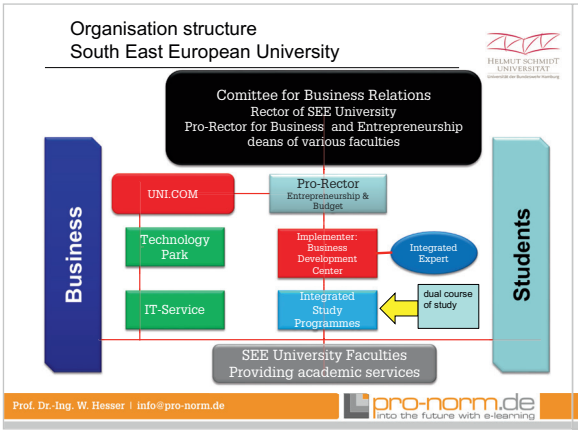

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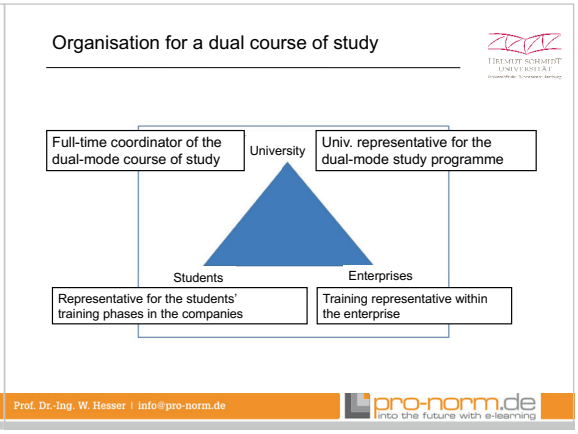


Fig. 14

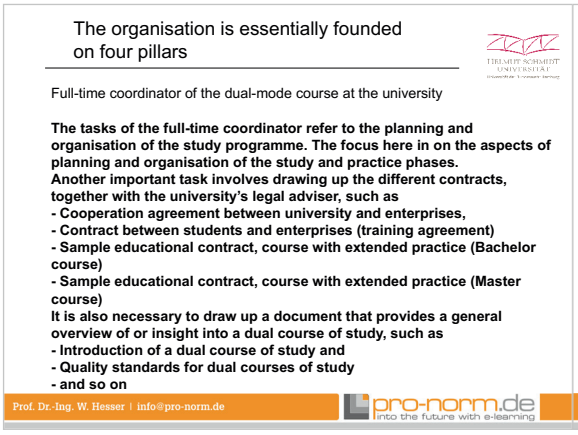


Fig. 15

Fig. 16

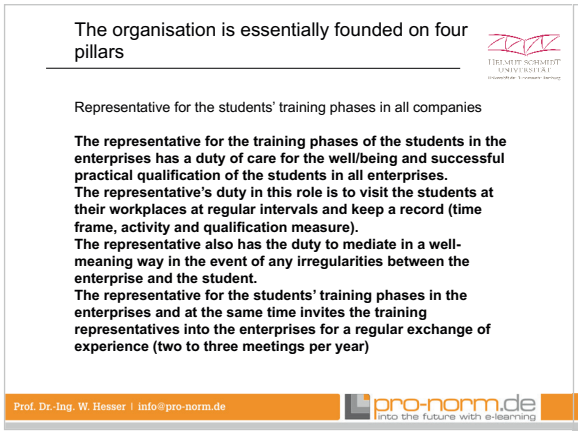
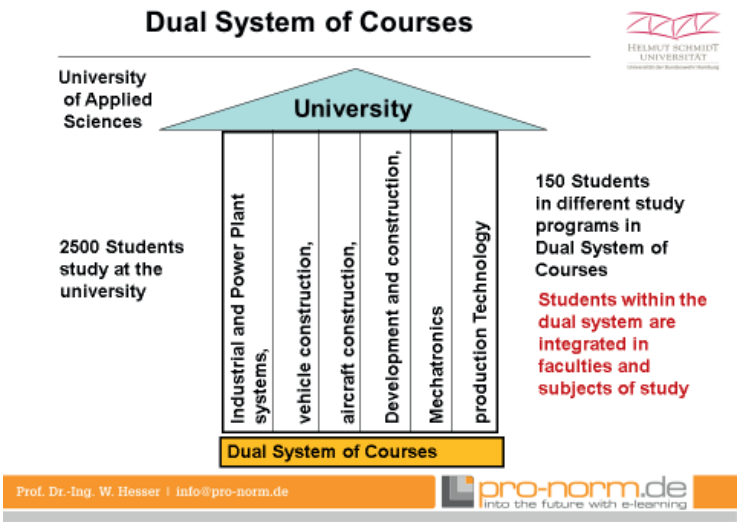


Fig. 17

Fig. 18

Dual higher education course (integrated model)



Advantages:

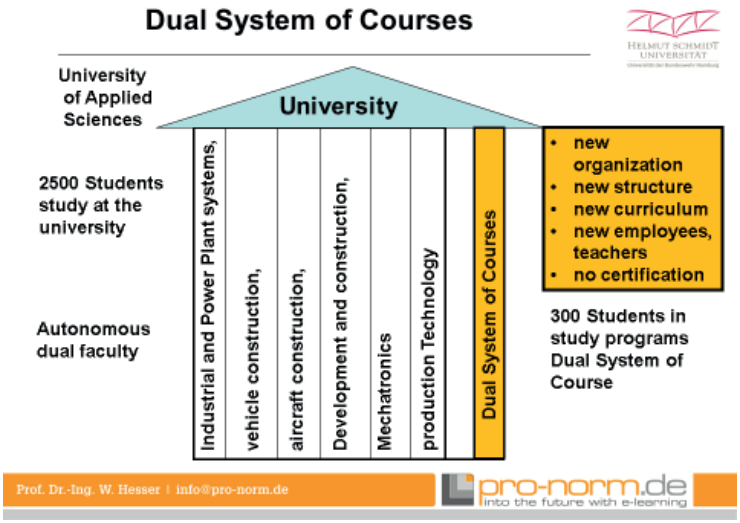
- No new curricula are necessary
- No new teaching staff/lecturers are necessary (*see disadvantages)
- Functions independently of the number of dual-system students in the term
- A separate organisation is only necessary to a limited extent, such as
    - o Application procedure
    - o Coordination of university, enterprises, students
    - o Supervision concept for students
    - o Examination procedures for student achievements, such as reports, etc.
    - o Marketing/recruitment of enterprises
    - o Utilisation of existing quality management
    - o Utilisation of the experience of the existing accreditation procedure
    - o and so on

Disadvantages:

- Lack of identification of the teaching staff/lecturers with the dual higher education course
- Lack of supervision for the students from teaching staff/lecturers (* would depend on the extent to which the university is able to assign a member of the teaching staff to supervision)
- Limited consideration given to timing of the examination dates (examination dates are often in the university vacations)
- Practical term is very difficult to integrate into the normal course procedure
- Special requirements from industry on the course of study are difficult or impossible to implement
- and so on

Example 1

Dual higher education course (independent model)



Advantages:

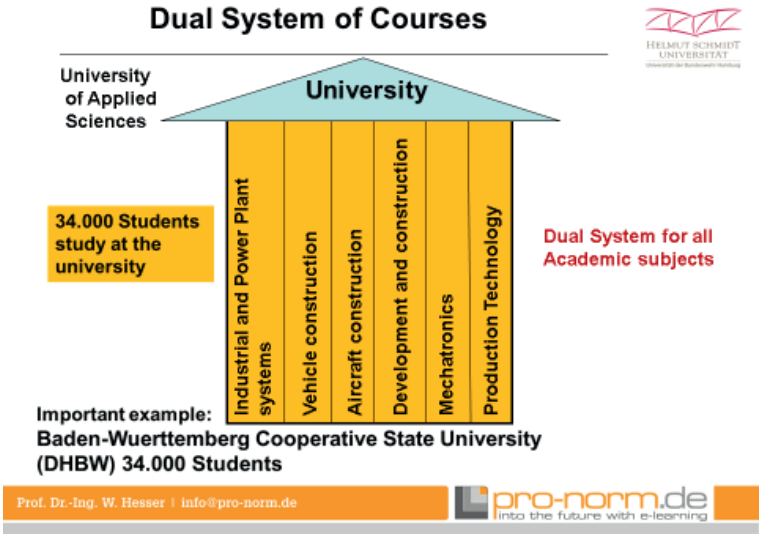
- High level of identification of the teaching staff/lecturers with the dual course of study
- Organisation and structure are designed in a manner specifically aimed at the dual course of study
- Intensive supervision for the cooperation between university, enterprises and students
- Additional practical term can be easily integrated
- Can be better aligned to the needs of industry
- and so on

Disadvantages:

- New organisations and structures have to be established
- Curricula have to be newly developed to match the dual course of study
- Teaching staff/lecturers have to be appointed in accordance with a capacity plan
- Administrative personnel have to be appointed
- Coordinator for higher education institution, enterprises, students
- Application procedure
- Supervision concept for students
- Examination procedures for student achievements, such as reports, etc.
- Marketing/recruitment of enterprises
- Every year it is necessary to guarantee a sufficient number of dual-system students!
- Development of a quality management system
- Development of independent accreditation
- and so on

Example 2

Cooperative state universities with an exclusively dual form of study



Advantages

- High level of identification of the teaching staff/lecturers with the dual higher education course
- Organisation and structure are specially geared towards the dual course of study
- Intensive support and cooperation between university, enterprise and students
- Additional practical exercises can be easily integrated
- The needs of industry can receive better consideration and be integrated into the training
- and so on

Disadvantages

- New organisations and structures have to be set up
- Curricula have to be redesigned to match the dual course of study
- Teaching staff/lecturers have to be recruited and deployed in line with a capacity plan
- The administrative personnel have to be appointed
- Coordinators for university, enterprise and students have to be appointed
- Application procedures have to be drafted for the candidates (students)
- Supervision concept for students
- Examination procedures, such as reports, etc., have to be developed for student achievements
- Marketing/recruitment for enterprises has to be developed
- It is necessary to guarantee/recruit a sufficient number of dual-system students every year!
- Development of a quality management system
- Development of independent accreditation
- and so on

Example 3

3 Supervision of students in the dual system of study within universities and enterprises

3.1 Supervision of students in the dual system within universities and enterprises

The supervision of students in the dual system at universities and colleges of advanced vocational studies and within enterprises is at the centre of a discussion among the scientific community in Germany. The key indicators on the supervisory relation describe the numerical ratio of students to academic (and arts) personnel in full-time equivalence excluding any personnel with outside funding. The indicator is often used to measure the conditions of study and quality of the education. For the field of engineering sciences at universities and equivalent higher education establishments (incl. schools of art), the figure for the supervisory relationship in 2016 was given as 22.7 students[1], for the Baden-Wuerttemberg Cooperative State University (DHBW) as 15.8 students[2] and for universities of applied science as 27.4 students[3]. However, the supervision ratio is only one indicator among many and is not necessarily the sole deciding factor in the quality of supervision actually experienced.

The students in the dual system of higher education are generally subject to different levels of load. In addition to the theoretical studies, i.e. the acquisition of knowledge in the corresponding subject of study, success is also required in gaining practical proficiency. During this process, they not only experience a high level of pressure in terms of work and achievement, but also generally increased pressure of time, which is difficult to master without good time management.

Before the start of their studies, students in dual-mode courses of study therefore face the task of managing their time in such a way as to guarantee success in both their academic studies and their apprenticeship or practical qualification within the enterprise.

Organisation of the course and supervision of the students therefore have a decisive influence on the course proceeding without conflict. It is worth noting that, despite poor supervision ratios, a successful study situation may exist and a relatively good supervision ratio is no guarantee of a good level of supervision that covers the needs of the students.[4]

The quality of student supervision results from a series of subjective assessments, examples of which include

- the organisational framework,
- the commitment of teaching staff,

1 Table from Statistisches Bundesamt (Federal Statistics Office), supervision ratio for universities and equivalent higher education establishments in 2016

2 Table from Statistisches Bundesamt (Federal Statistics Office), supervision ratio at the Baden-Württemberg Cooperative State University 2016

3 Table from Statistisches Bundesamt (Federal Statistics Office), supervision and personnel ratio, universities of applied sciences 2016

4 WR_Empfehlungen zur Qualitätsverbesserung von Lehre und Studium. Drs. 8639-08. Berlin, 04.07.2008 [Recommendations from German Council of Science and Humanities on improving the quality of teaching and studies]

- the trustworthiness of the teaching staff,
- the appreciation of the students by the teaching staff,
- the accessibility of the teaching staff,
- the reliability of the teaching staff in terms of their statements.

Another important indication of the supervision of students within the dual system is the supervision by university teachers and lecturers during the practical phases. Part of the supervisory concept across the different learning venues involves supervision of the students during the practical phases by university teachers and lecturers. The training concept within the enterprises is the combination of subject matter for the theory and practical phases and part of the structural linking, which also serves as quality assurance for the dual courses of study.

Supervision during the practical phases in the enterprises is extremely important as approx. 90% of students taking part in a survey[5] observed that they were not supervised by lecturers from the university/college of advanced vocational studies during the practical phase. In addressing the question as to the underlying reasons for this, it is necessary to consider two sides. The side of the enterprises, which fundamentally do not include the universities in their concepts for training and qualification measures, and on the other side the universities, in this case the professors and lecturers, who only accept very limited responsibility for the supervision of the dual-system students within the enterprises.

If we refer to the recommendations from the German Council of Science and Humanities (WR 2013), supervision of the students is allocated a special status. Here a supervisory infrastructure is recommended for the specific interlinking of university and enterprise, which includes a regular exchange between those responsible on the academic and practical side across the learning venues. Implementation of this requirement can only be achieved for the students by a documented and functioning supervisory concept. At the same time, the supervisory concept is regarded as an absolutely necessary requirement for accreditation of the dual course of study.

Drawing up a supervisory concept represents a joint task for the enterprise and university and it should be drafted or defined jointly within the framework of a working group. In detail, the supervisory concept describes the following functions:

1. Full-time coordinator of all dual-mode courses at the university,
2. University representative for the dual study programme,
3. University representative for the dual system of study in the respective course,
4. University representative for the training and qualification phases of the students within the enterprises,
5. Representative within the enterprise (personnel department),
6. Representative within the enterprise (training department),
7. Representative within the enterprise within the respective department,
8. An appropriate number of tutors within the university and the enterprises,
9. The representation of the students.

See Section 3.2: Description of the representatives' tasks within the supervisory concept.

5 Hesser, W.; Langfeldt, B.

Irrespective of the supervision by the individual representatives, it is advisable to set up a permanently installed committee with the aim of managing information, communication and coordination between university and enterprise.

Another elementary criterion for a dual higher education course is the duality as a connection and coordination of two learning venues…as well as an organisational coordination of the learning venues. Key features are the degree of coordination of teaching contents and (practical) modules, the integration of the practical components into the curriculum.[6]

In our opinion, the causes for the existing deficits result from

- insufficient consultation between university of applied science and enterprises,
- insufficient resources for coordination within the enterprises,
- insufficient resources in the coordination offices of the universities,
- insufficient resources for coordination and further development of the study programme (it should be pointed out here that this applies to both sides).

However, it can be stated that both the supervisory structures at dual universities and colleges of advanced vocational studies as well as the coordination of teaching/learning materials of the universities in terms of time and subject matter, on the one hand, and the contents of training and qualification measures, on the other, are joint tasks of the university and the enterprises.

The German Council of Science and Humanities formulates its recommendations as follows[7]: "The dual format of study additionally places special requirements on the supervision of students. In this case, it is advisable to employ concepts that include those responsible on both the academic and practical side across the learning venues. One example of this may be the supervision of the practical phase by the university teachers and presentation of the results in the university / college of advanced vocational studies by the students together with the supervisors from the practical partners."

A **documented supervisory concept** is therefore regarded as absolutely necessary for students in the dual system.

3.2 Organisation of the supervision for a dual study course

The organisation of supervision for students in the dual system is essentially based on nine participants/players who work closely and confidentially within this network. A restricted job description provides initial insight into the tasks of the participants/players/representatives.

1 Full-time coordinator of all dual courses of higher education

The tasks of the full-time coordinator refer to the planning and organisation of the study programme. The focus here is on the aspects of planning and organisation of the study and practice phases.

6 WR 2013: 22, 24
7 WR 2013: 27

Other important tasks involve drawing up the different contracts, together with the university's legal adviser, such as

- Cooperation agreement between university and enterprises,
- Contract between students and enterprises,
- Sample educational contract, course with extended practical component (Bachelor course),
- Sample educational contract, course with extended practical component (Master course).

It is also necessary to draw up documents that provide a general overview of or insight into a dual course of study, such as

- Introduction of a dual course of study and
- Quality standards for dual courses of study.

2 University representative for the dual higher education programme

The university representative for the dual higher education programme is responsible for the interests of the university and the students. Close coordination is required here between the full-time coordinator in relation to the planning and organisation of the course of study. The university representative also has a supervisory function over the students with respect to issues of the course content and course procedure.

At the same time the representative assumes the task of a mentor for the students and issues invitations to regular discussions.

3 University representative for the dual higher education programme in the respective course

The university representative for the dual high education programme for the respective course bears the responsibility for the education of the dual-mode students, and here in particular for imparting the academic knowledge relating to the course contents.

This representative is at the same time coordinator and member in the working group for developing the theory/practice modules and the task of documenting all theory/practice modules of the faculty. The documentation contains a list of the enterprises that apply these theory/practice modules.

At the same time this representative also has the task of supervising the students during the practical phase or of arranging appropriate supervision.

4 University representative for the qualification phases of the dual-system students for the respective course of study in the enterprises

The representative for the qualification phases of the students within the enterprises has a duty of care for the well-being and successful practical qualification of the students in all enterprises where the university students are engaged. The representative's duty in this role is to visit the students at their workplaces at regular intervals and keep a record (time frame, activity and qualification measure). The representative also has the duty to mediate in a well-meaning way in the event of any irregularities between the enterprise and the student.

The representative for the students' qualification phases in the enterprises invites the training representatives of the enterprises to a regular exchange of experience (two to three meetings per year).

At the same time, this representative is an access coordinator and issues the access authorisation to all participants for the information, documentation, communication and coordination system.

5 Representative within the enterprise (personnel department)

The representative within the enterprise has the task of selecting the applicants/students: testing the conditions for appointment, checking that test/standards (required grade, access requirements) have been fulfilled, organising the test for appointment of students; selecting applicants/students after a successful in-company test. Compiling and handing out the welcoming folder. Appointing the applicants, because ultimately the decision to appoint candidates rests with the enterprise.

6 Representative within the enterprise (training department)

The representative within the enterprise has the task of guaranteeing implementation of the training and qualification concept for the students within the dual system. This representative's particular task is to select and allocate qualified departments within the enterprise for the dual-system students in accordance with the theory/practice modules as well as with the subject matter and learning objectives that these modules contain.

The task also includes requesting and examining the achievements of the dual-system students within the course of study and conducting the feedback interview.

Within the scope of his/her duty of care, the representative is the point of contact for the students both in terms of content for the training and qualification and in terms of responsibility for a good company atmosphere.

7 Representative within the enterprise for the respective department

The representative within the enterprise for the respective department has the task of implementing the theory/practice modules and issuing appropriate tasks for the dual-mode students in agreement with the training and qualification concept. Duties also include examining the practical reports for the respective practical phase to ensure that they are correct (in terms of formal aspects as well as technical and functional content). Documentation of and reflection on the acquired learning contents (competency profile) also has to be carried out. After completion of the practical phase, this representative has the task of conducting and documenting a feedback interview with the student concerning subject-related and methodological competency as well as self-competence and social skills.

He/she also fulfils the tasks of an instructor and is responsible for a working relationship with the students based on trust.

8 An appropriate number of tutors within the university and the enterprises

Tutors have an important supervisory function for the dual-system students both at the university and in the enterprise. They are able to recognise the students' capacity limits and support them with advice. If conflicts should arise, they are

able to influence the various partners at the university and in the enterprises and thus contribute to the students' success.

9 The representation of the students

Examples of tasks for the students' representation include: student representation, student counselling, faculty council, course planning commissions, tutor and mentor programme, introduction for freshers, contact to other student representatives, organisation of events, having fun together.

3.3 Workshop description

Supervision of dual-system students in universities and enterprises

Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective.

Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome.

The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of this workshop is to draw up a supervisory concept for dual students at their university and in the enterprises. The basis for this is the document "Supervision of students in the dual-system of study within universities and enterprises".

Sample procedure for a workshop:

- Discuss the contents of the document "Supervision of students in the dual system of study within universities and enterprises".
- In the group, discuss the organisational infrastructure for your university and for the enterprises you know.
- Working together as a group, illustrate the organisational infrastructure.
- Discuss the necessary personnel requirements.
- Decide on the staff positions and provide a brief job description (5 lines).

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as a text and photos

Working resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantity.

Figure 1 to 9 – Chapter 3

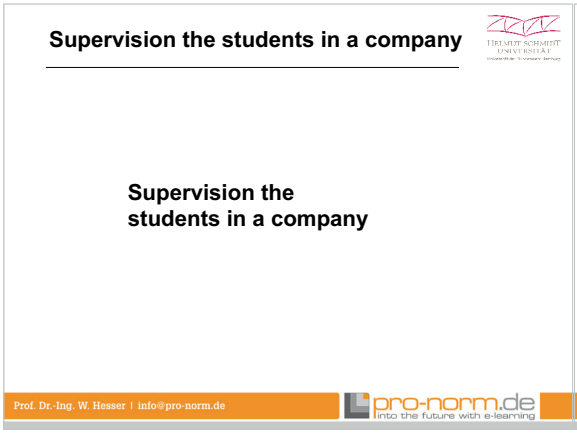


Fig. 1

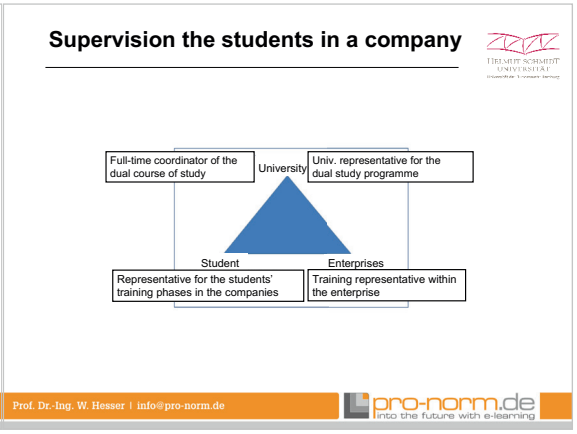


Fig. 2

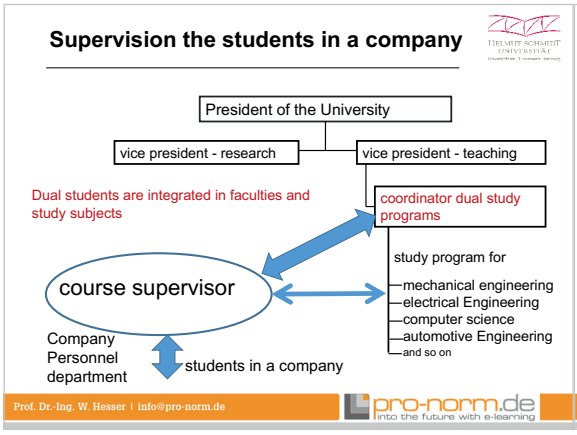


Fig. 3

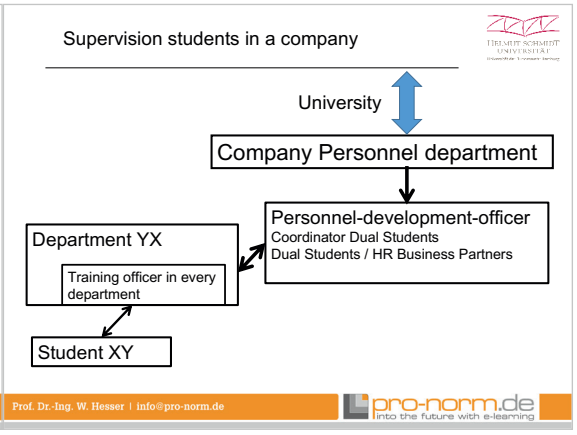


Fig. 4

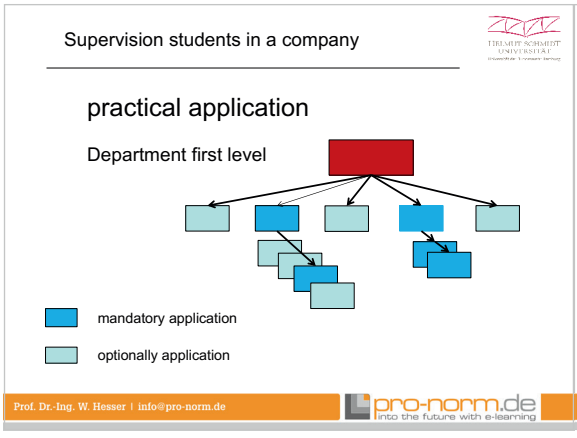


Fig. 5

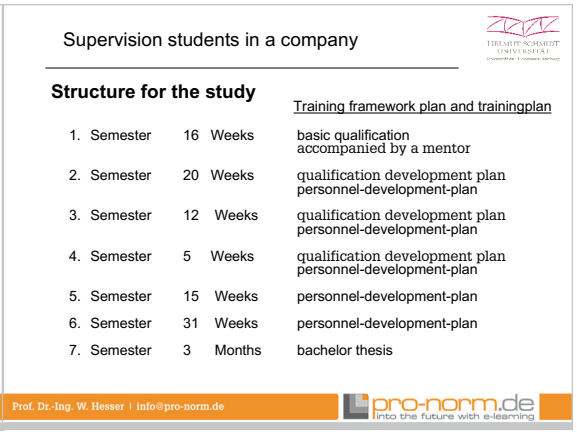


Fig. 6

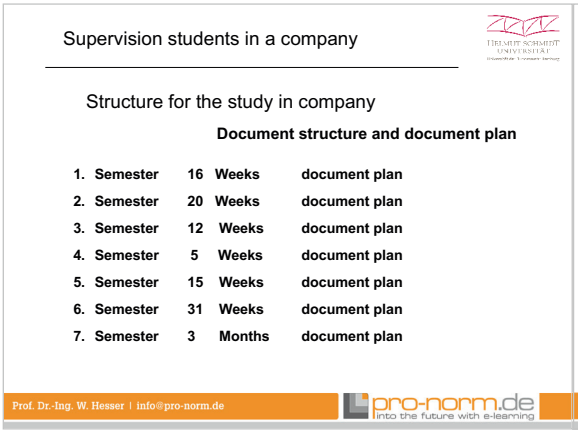


Fig. 7

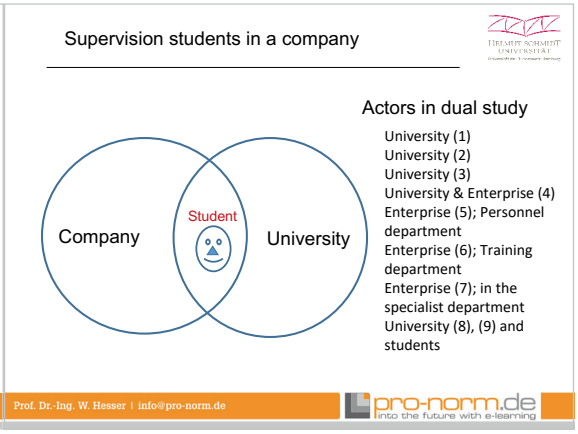


Fig. 8

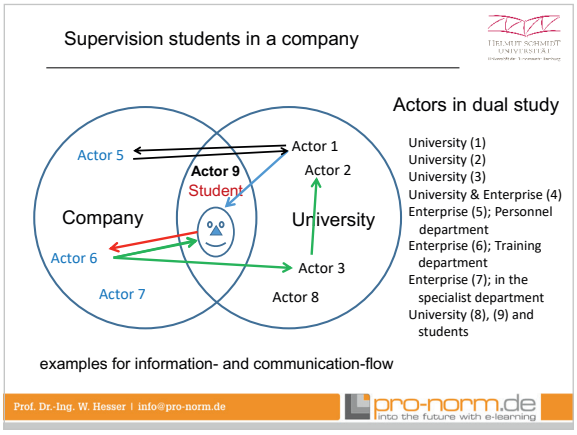


Fig. 9

4 Development of a training concept for the dual course of study with extended practical component

4.1 Development of a training concept for the dual course of study with extended practical component

The didactic link between the two learning venues of university and enterprise is based on the fundamental idea of developing an "integrated overall curriculum". Evolving curricular integration of the two learning/study venues – university and enterprise – results in a reciprocal influence on the education and training of the students within the dual system. Not only are synergy effects generated, but also, from the very outset, there is an extension of competencies, particularly social and performance-related skills in the teaching/learning venue of enterprise. This creates a level of training for the students with process integration that stands out due to immediacy of the professional qualification (in the sense of employability) and differs distinctly from a conventional university-dominated education. Such a qualification has been demanded by business for a long time but can only be achieved if business itself actively becomes involved in the design stage. A "curriculum working group" needs to be formed for planning and implementing the didactical part of the course and the organisation in all study phases. This working group comprises representatives from the enterprises, chambers of industry and commerce as well as subject specialists from the university, e.g. "production technology" in the "industrial engineering" course. This working group is where the target-oriented agreements on the contents of the curriculum for an "integrated overall curriculum" are to be made and transferred to the university and the enterprise as a basis for planning and decision-making.

Today learning within the enterprise is explained even more clearly by the relation to work and business processes – with process-orientation. Acting instead of an employee with selective skills and knowledge is an employee who has a complex understanding of the expertise that is always evolving in a fully integrated manner in relation to the applications. In order to be able to follow the recommendations of the German Council of Science and Humanities and to deal with the changed qualification requirements of the enterprises both in terms of didactical aspects and those of education economics, it is necessary to develop in-company forms of learning organisation and learning opportunities with relevance to studies. This means that the curriculum working group needs to develop an "integrated overall curriculum" based on competence theory. As a result, a distinction has to be made between the subject curricula of the university and the integratively developed "theory/practice modules" and hence an integrative overall curriculum for the respective course. At the centre of the development of an overall curriculum concept are the requirements of the enterprise as target descriptions for the learning and study within the context of the in-company work as part of the professional competency profile. The interactive overall system curriculum of the university and enterprise with the theory/practice modules, related

to the core subjects (compulsory subjects) of the respective course of study, yields the overall curriculum concept.

The international development and the accompanying regional change in the economy towards production organisations based on knowledge and processes often do not agree with the available qualifications of employees, particularly where development, engineering design, operations scheduling and production within the enterprise coincide. The economy, the supplier industries and the mechanical engineering enterprises face the questions of to what extent education at universities and personnel development measures are adapted to these changes and what consequences can be derived from them. Committed involvement and promotion of the dual higher education programme by the enterprises is a suitable response. Enterprises are required to pay greater attention to the future new generation of recruits in terms of strategic human resources planning. For the future employees, this concerns an educational path appropriate for the market that prepares them for their future work in systemic production organisations and additionally enables them to participate in an accelerated career in the middle management of leading enterprises.

4.2 Development of the theory/practice modules

Although the dual system of higher education has been in existence for approx. 30 years, development of the theory/practice modules is still in its infancy. This is shown by the study conducted by Hesser and Langfeldt[1] in 2015 in which approx. 37% of students state that coordination of the contents of the university curriculum with those of the qualification measures for students with extended practical component is only limited or not discernible. In its recommendations for 2013, the German Council of Science and Humanities also formulates the coordination of the training contents of the two educational institutions as a prerequisite for recognition of a dual course of higher education study by the certification/accreditation bodies.

The German Council of Science and Humanities lists the following basic recommendations:

Minimum requirements – dual higher education study

- Academic and practical professional elements form equivalent parts,
- Duality is the connection and coordination of two learning venues,
- An academic or science-related and an integrative course is a key feature of duality.

The profile of dual courses of study is determined by six dimensions

- Relationship of the learning venues,
- Academic standard,
- Design of the practical context,

1 Hesser, W.; Langfeldt, B.

- Services by the practical partner (enterprise),
- Support structures by the universities, e.g. supervisory infrastructure for students,
- Costs and finance.

Quality assurance – Course of study

- Structural linking of the learning venues; coordination of the learning objectives of the curricula and practical training,
- Recruitment and composition of the teaching staff,
- Introduction of a reporting function,
- Regular dialogue between the responsible parties on the academic and practical sides,
- Establishment of a centre for dual higher education,
- Participation of the enterprises in financing the dual course of study,
- Freedom of teaching and research.

Quality assurance – practical learning venue

- Define practical vocational training contents in writing,
- Create connections to the academic modules,
- Agree on methods of practical knowledge transfer,
- Agree on type of supervision (Supervision agreement),
- Agree on qualifications of the supervisors.

Based on the study entitled "Berufsbegleitende Weiterbildung zum Industriemeister 2000 und Diplom-Wirtschaftsingenieur (FH) am Studienort Betrieb" [In-service continuing education for qualification as an industrial supervisor and graduate industrial engineer within the workplace as a learning venue], in which a very complex method for developing theory/practice modules is illustrated, our concern is to show a simplified theory/practice model that can be applied to enterprises and universities.

The requirements of the German Council of Science and Humanities provide the foundation for this theory/practice module. According to this, there are two training venues in which dual-system students are intended to obtain an academic and practical qualification for their professional career. One requirement resulting from the introduction of the Bachelor/Master courses of study is that, since 2010 a module manual has to be available for every individual course of study at all universities in Germany. The universities are obliged to provide a detailed description in this module manual, i.e. lectures and exercises with their subject contents and in the scope covered by the contents.

One first step towards a simplified procedure for developing theory/practice modules is to indicate and thus select the core subjects (compulsory subjects) of the course and the description of the learning contents and learning objectives in accordance with the module manual. Examples for the course of industrial engineering include: statistics, **business administration**, production technology, **materials management**, **logistics**, product planning and control (PPC), company management, management controlling, marketing.

Selection of the core subjects (compulsory subjects) and the description thereof by the university through learning contents and learning objectives provides a basis for the development of theory/practice modules within the enterprises.

A second step should integrate the enterprise. Here the representation becomes somewhat more complex by having the enterprise and its departments (not the group of companies) describe each of their products or assignments in a maximum of 15 lines.

The following documents can be recommended:

- Description of the enterprise (max. 15 lines)
- Description of the departments that are related to the stated core subjects (compulsory subjects) or for the selected combination – department and core subjects of the course
- Description of the tasks of the departments in structured form (max. 15 lines).

The selected core subjects (compulsory subjects) for the course and the departments with their tasks form the basis for developing the theory/practice modules.

A further step involves defining the learning contents and learning objectives for the tasks and hence for the activities in the departments on the basis of a competency analysis.

Example: Order processing department

Topic/task	**Learning content**	**Learning objective**
Order processing	Define the procedure for a customer order	Prepare a list of activities for the order

A theory/practice module thus consists of providing the learning contents and learning objectives for a core subject (compulsory subject) by the university and the description of tasks in the department of the enterprise, combined with the learning contents and learning objectives in the department of the enterprise. **The learning contents and learning objectives of both teaching/study venues, namely university/course and enterprise/department have to be coordinated!**

4.3 Development of a theory/practice module – sample solution

Excerpt from the module manual of the University of Applied Sciences Hamburg

Course in Industrial Engineering
Illustrated by the subject of business administration in the first semester

Learning objectives

Subject-related and methodical competencies:
The subject of industrial management (3 hours per week) permits a basic understanding of the interrelationships in industrial and service enterprises. The fundamental opportunity for students to strategically build up an enterprise from

product and market objectives, via the establishment of an organisation and the most important core processes creates professional expertise. Also assisting in this are an understanding of the financial structure and the fundamental legal conditions. In operational terms, the student has the capability to develop and comprehend a useful technical and business procedure of managing orders, including the logistics. At the forefront of methodological competence are the positioning of the company with its products in the market and the organisation of profitable production. Within the context of social skills and self-competence, the ability to work in a team is practised in initial role plays featuring management scenarios and in the joint drafting of a presentation with feedback from colleagues.

Principles of study contents

- Position of the enterprise within the economic system, organisational chart, company functions, core processes,
- Legal affairs (German Civil Code/product defects, contract for work and services, patent law, enterprise forms),
- Personnel management/management styles, man-machine system, strategic planning,
- Balance sheet, costs, finances (liquidity versus profitability), operational functions,
- Overview of technical order processing from the drawing, parts list, numbering via work plan to factory organisation,
- Overview of the organisational order management from the sales forecast via sales plan, production range, materials management to management control,
- Quality assurance (FMEA), maintenance,
- Basic concepts of personnel management (from appointment to personnel development),
- Examples are introduced for every topic, and a discussion takes place on the special relevance of each topic for the existence of the enterprise. The financial system is only outlined in principle.

Sample solution for a practical module on "Materials Management/ Logistics/PPS" in dual higher education course for industrial engineering sciences

Process-oriented study approach for Materials Management/Logistics, Production Planning and Control

The module design defines and depicts

- the logistics chain of materials management,
- the function-oriented structure of the enterprise with the business units: procurement, production, sales and
- the options for linking processes of materials logistics and the PPC with the organisational structure.

Materials management covers all corporate policy measures of planning, executing and monitoring the procurement, storage, distribution and disposal of materials.

Logistics is the sum of all activities dealing with the planning, control and monitoring of the entire flow within and between business units. Production planning and control is taken to mean not only the planning, arrangement and supervision of production but also refers these activities to the upstream and downstream areas in terms of quantity and time scheduling.

This approach is based on two corporate decisions:

1. Ordering

The customer places the order on the basis of the quotation. An order is created within the enterprise. This operation triggers a series of activities as rough planning: production programme planning, materials provisioning, capacity planning, lead time scheduling. The order release takes place as a result.

2. Production

The production division has the following tasks:

- specify machine commitments,
- provide complete, technological work documents,
- assume control of the order,
- simulate and implement operations and
- provide assurance of the quality.

Recommendations for the enterprise on the practical module "Materials Management/Logistics/PPC" enterprise-based semester in the second year of study

Topic	Study contents	Learning objectives
Completion of an order in the complexity of a process-oriented order flow with focuses on ▪ order release ▪ fabrication	▪ Avoidance of bottlenecks in production by means of optimum material requirements planning ▪ Presentation of material flows ▪ Presentation of information flows between sales, production, procurement ▪ Quality assurance ▪ Present and analyse in-company interrelations and interface relations	▪ Present functional relationships ▪ Define business processes ▪ Structure complex operations ▪ Develop and provide application systems for information processing ▪ Develop data flow plans ▪ Work out data models ▪ Develop databases

Topic	Study contents	Learning objectives
	▪ Develop sets of documentation,	▪ Describe the assignments (requirements specification, functional specification) – project management ▪ Define interfaces for the order release and production ▪ Interface planning: Procurement – stock management – present production with the PPC ▪ Plan, define and describe work processes ▪ Check set of drawings and design parts list ▪ and others, too.

Definition WIKIPEDIA

Study content: *Study content, teaching material, subject matter or course material are all terms used for the theoretical and practical information that learners or trainees have to acquire in order to successfully complete their education or training.*
Learning objective: *Learning objectives describe the gains that a learner achieves in relation to a certain content. Teaching objectives indicate the target that a teacher wishes to achieve with the aid of the topics taught. The combination of teaching and learning objective is called the course objective.*
Self-determined learning: *In self-determined learning, learning objectives are set by individual study plans. This is carried out by the learners alone (autodidacticism) or in combination with a tutor (e.g. subject expert, educationalist). Self-determined learning is applied above all in progressive education and in adult education. The learning plan is frequently divided into individual learning units with intermediate learning objectives.*
Competence analysis: *Competence analysis/competence profile is a tried and tested procedure for determining individual cross-subject and professionally related competencies as well as the study and professional interests of adolescents and adults.*

4.4 Significance of intercultural competence

Intercultural competence is the ability to interact successfully and appropriately with individuals and groups from other cultures, in the narrower sense the ability to deal with people of different cultural orientations to the satisfaction of both parties. This ability may already be present at a young age or may also evolve and be

promoted within the context of inculturation[2] (direct and in indirect upbringing). This process is termed intercultural learning. The basis for successful intercultural communication is emotional competency and intercultural sensitivity.

A person who is interculturally competent is someone who grasps and understands the specific concepts of perception, thinking, feeling and acting when working together with people from cultures that are foreign to him or her. Early experiences are included and extended as far as possible without prejudices while at the same time an attitude of openness and learning is necessary during the intercultural contact.

Intercultural competencies are not defined from within firmly established cultures but refer precisely to cultural differences that occur in different ways in every group of people. It may generally be assumed that mixed forms apply[3].

The increase in international mobility of students is accompanied by the promotion of intercultural competence and is one intention of the Bologna reforms and the creation of a uniform European Higher Education Area. The target level of 20% of university graduates with a period of study abroad during their course (cf. Council of the European Union 2011) is currently achieved in with approximately 30% of students having gained experience abroad in their first or Master's course[4]. "A good third of internationally mobile students (36%) are planning (at least) one further period of study abroad. In contrast, another 38% of internationally mobile students are not planning a further period of study abroad. Roughly one quarter (26%) of the internationally mobile group is still uncertain in relation to completing further periods of study abroad during their course"[5].

Among the students in the dual system that we surveyed[6], 9.1% indicate that they have already completed one semester abroad and 13.2% are planning such a semester for the near future. Consequently, the group we examined exhibits a lower level of international mobility than the entire population of students at universities and other higher education institutions[7]. Broken down by subject groups, only 6.5% of the dual-systems students of engineering sciences and 13.2% of the dual-system students of economics have completed a semester abroad. This conflicts with the idea of the Bologna reforms and may reduce the opportunities for students in the dual system to acquire key qualifications and operate professionally on a global basis at a later stage.

The question "What in your opinion does completion of a semester abroad depend on?" produced 7,616 replies when respondents were prompted to state the two most important reasons. Respondents most commonly considered approval by the enterprise (57.6%) to be decisive, followed by the availability of funding

2 Inculturation is the integration of a single individual in the culture with the acquisition of values and norms.

3 see https://de.wikipedia.org/wiki/Interkulturelle_Kompetenz; Retrieved August 2017

4 Woisch, Andreas und Willige Janka: Projektbericht (2015): Internationale Mobilität im Studium 2015. [Project report (2015): International mobility in higher education in 2015. Deutscher Akademischer Austauschdienst (DAAD). Deutsches Zentrum für Hochschul- und Wissenschaftsforschung GmbH

5 Woisch, Andreas und Willige Janka: Projektbericht (2015): Internationale Mobilität im Studium 2015. [Project report (2015): International mobility in higher education in 2015. Deutscher Akademischer Austauschdienst (DAAD). Deutsches Zentrum für Hochschul- und Wissenschaftsforschung GmbH

6 Hesser, W.; Langfeldt, B.

7 Woisch, Andreas und Willige Janka: Projektbericht (2015): Internationale Mobilität im Studium 2015. [Project report (2015): International mobility in higher education in 2015. Deutscher Akademischer Austauschdienst (DAAD). Deutsches Zentrum für Hochschul- und Wissenschaftsforschung GmbH

(56.5%), promotion by the enterprise (39.1%), and, in fourth position, the workload during the course (37.9%). The size of the enterprise generally affects the students' responses in a very comprehensible manner. Funding and approval by the company in small companies with up to 49 employees is no main reason because these enterprises tend to support a semester abroad less often. Conversely, the financial issue is much more important than in larger and major companies. An examination by size of enterprise reveals significant differences in the replies from various subjects for almost all of the aspects listed apart from those of "Approval by the enterprise" and "Other reasons". Prospective economists have a lesser tendency to indicate workload during the course or personal contacts as a relevant reason for or against a semester abroad but tend instead to indicate funding and encouragement by the enterprise to a greater extent. The results suggest that the low international mobility of students in the dual system is essentially attributable to the attitude of the enterprise with respect to this issue. Apparently, employers only offer limited support for dual-system students in the acquisition of an additional qualification that may be important for their career path. With the increasing internationalisation of business, international mobility and experience in this aspect are demanded as a matter of course, at least in management positions. Failure in intercultural communication may result in a tangible lack of business success and may thus obstruct or even terminated career progress.

This stands in the way of both European and international mobility of the dual-system students and does not encourage students in the dual system to operate on a pan-European or international basis. Already today, professional mobility within increasing Europeanisation and internationalisation of the business world is taken for granted and seen as a prerequisite for successful career prospects.

As a concluding formulation, we may state that most educational establishments involved with dual higher education courses have difficulty in integrating semesters abroad into the structuring of their curricula. As a result, dual-system students have limited opportunities of acquiring intercultural competencies, as has been shown in research work dating from the 1960s up to the present. In an overview of studies on predictors of successful intercultural interactions by Mertesacker[8] intercultural competence is characterised by:

- intercultural sensitivity, openness, flexibility, self-assuredness
- respectful behaviour and openness
- an increase in communicative competence
- empathy as a predictor of reduced cultural shock
- improvement of self-assuredness, flexible handling of new situations
- language skill as a predictor of effectiveness, verbal and non-verbal competence
- motivation and intercultural knowledge
- awareness of cultural differences
- communication skills and intercultural self-confidence
- significant for appropriateness of assessment.

8 Mertesacker, Marion: Die Interkulturelle Kompetenz im Internationalen Human Resource Management. [Intercultural competence in international human resources management]. Josef Eul Verlag; ISBN 978-3-89936-938-0; S342

Intercultural competence cannot be outlined as a canon of fixed characteristics and knowledge. In addition to specific knowledge of other cultures, it is primarily a basic attitude with very different characteristics, such as "cultural sensitivity" and "performance-related competence". A period of study abroad by students in the dual system primarily promotes cultural sensitivity as a tolerant, appraising attitude and an unprejudiced perception of foreign cultures.

To summarise, the main concern is to arouse an awareness of the cultural backgrounds of feeling, thinking and acting as well as the relativity of world interpretations and promote the readiness and ability to reflect on one's own and foreign behaviour against this backdrop[9].

9 Heidemarie Hofmann, Birgit Mau-Endres, Bernhard Ufholz; Schlüsselqualifikation Interkulturelle Kompetenz. [Key qualification – intercultural competence] W. Bertelsmann Verlag GmbH & Co. KG ISBN 3-7639-3225

4.5 Workshop description

Development of a training concept for the dual course of study with extended practical component

Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective.

Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome.

The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of this workshop is to become familiar with the development of a theory/practice module in a simplified procedure. Support for this procedure will come from the document "Development of a training concept for dual course of study with extended practical component". The participants are intended to rehearse the practical method for drafting a theory/practice module.

Workshop schedule:

- Working in small groups, discuss the document "Development of a training concept for dual course of study with extended practical component".
- Again in small groups, devise the schedule for drafting a theory/practice module.
- Choose a core subject (compulsory subject) from a course of study at your university and describe the study contents and learning objectives in accordance with the module manual.
- A further step should integrate the enterprise. Describe the tasks of the department and hence the activities on the basis of an expertise analysis, i.e. the learning contents and learning objectives.
- Describe the theory/practice module in brief.

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as text and photos

Working resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantity.

Figure 1 to 22 – Chapter 4

Fig. 1

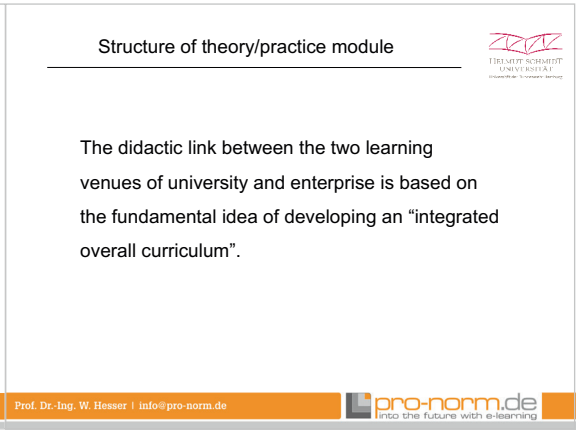


Fig. 2

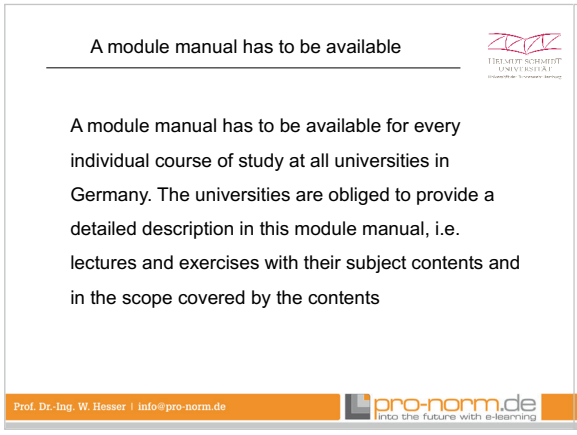


Fig. 3

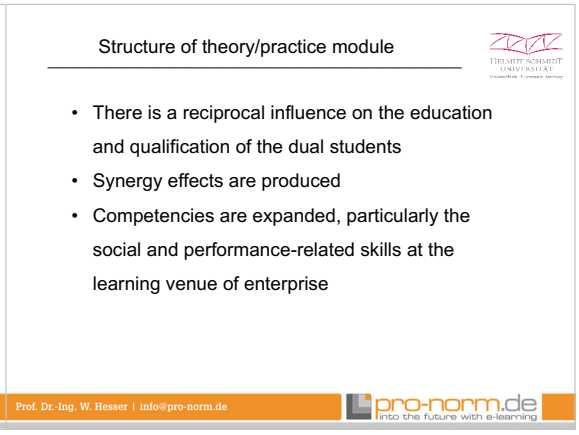


Fig. 4

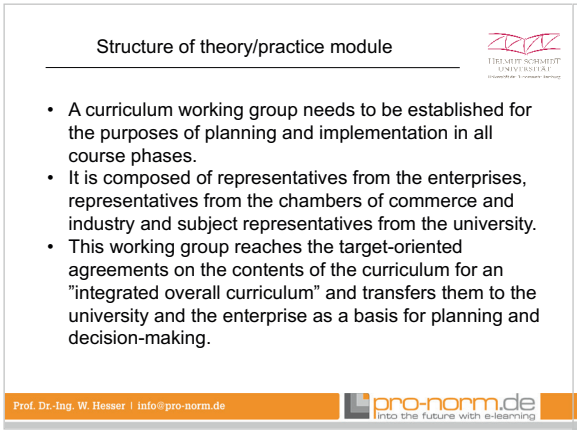


Fig. 5

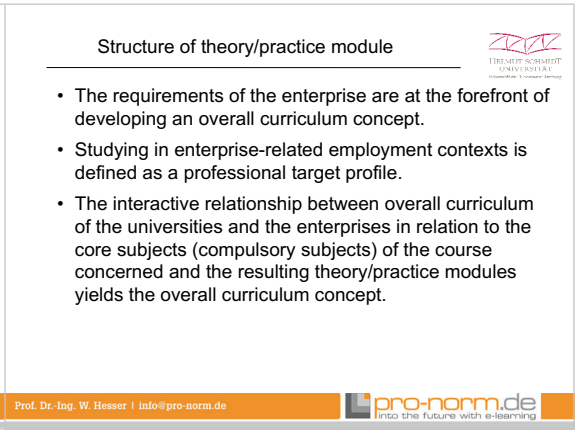


Fig. 6

Structure of theory/practice module

- Enterprises are required to pay greater attention to the future new generation of recruits as a strategic production factor.
- As far as the future employees are concerned, it is a matter of providing an educational path appropriate for the market that prepares them for their future work.

Fig. 7

Structure of theory/practice module

One first step towards a simplified procedure for developing theory/practice modules is to indicate and thus select the core subjects (compulsory subjects) of the university course and the description of the learning contents and learning objectives in accordance with the module manual.

Fig. 8

Structure of theory/practice module

Examples of the course of industrial engineering include:
Statistics, business administration, production technology, materials management, logistics, product planning and control (PPC), company management, management controlling, marketing.

Fig. 9

Structure of theory/practice module

A second step should integrate the enterprise:

The following documents can be recommended:
•Description of the enterprise (max. 15 lines)
•Description of the departments that are related to the stated core subjects (compulsory subjects) or for the selected combination – department and core subjects of the course
•Description of the tasks of the departments in structured form.

Fig. 10

Developing a theory/practice module

A theory/practice module thus consists of providing the learning contents and learning objectives for a core subject (compulsory subject) by the university and the tasks in the department of the enterprise, combined with the learning contents and learning objectives in the department of the enterprise.

Fig. 11

Developing a theory/practice module

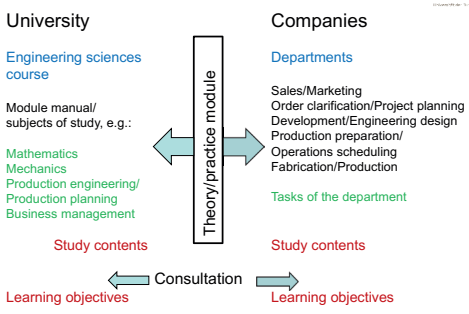


Fig. 12

Structure of theory/practice module

Principles of study contents
Position of the enterprise within the economic system, organisational chart, company functions, core processes.

Learning objectives
Subject-related and methodical competencies:
The subject of industrial management (3 courses per semester) permits a basic understanding of the interrelationships in industrial and service enterprises.

Fig. 13

Structure of theory/practice module

Example: Order processing department

Topic/task	Study content	Learning objective
Order processing activities	Procedure for processing a customer order	Drafting a list of for the order

Fig. 14

Recommendations for the enterprise on the practical module "Materials Management/Logistics/PPC" enterprise-based semester in the second year of study

Topic	Study contents	Learning objectives
Completion of an order in the complexity of a process-oriented order flow with focuses on – order release – production	– Avoidance of bottlenecks in production by means of optimum material requirements planning – Presentation of material flows – Presentation of information flows between sales, production, procurement – Quality assurance – Present and analyse in-company interrelations and interface relations	- Present functional relationships - Define business processes - Structure complex operations - Develop and provide application systems for information processing - Develop data flow plans - Work out data models - Develop databases - Draw up a list of activities for solving the order - Describe the assignments (requirements specification, functional specification) – project management - Define interfaces for the order release and production, - Interface planning: procurement – stock management – present production with the PPC,

Fig. 15

German Council of Science and Humanities

Key criteria that enterprises should meet

- High level/expertise in the practical phases
- Willingness to release students for studies
- Appropriate facilities at the workplace
- Appointment of a contact person
- Guarantee of appropriate support in terms of subject matter
- Requirements for vocational training courses
- Willingness to develop the course further

Dr Irene Seling
Confederation of German Employers' Associations (BDA)

Fig. 16

German Council of Science and Humanities

Quality assurance – practical learning venue

- Define practical vocational training contents in writing
- Create connections to the academic modules
- Agree on defined methods of practical knowledge transfer
- Agree on type of supervision (Supervision agreement)
- Agree on qualifications of the supervisors

Fig. 17

The quality of student

The quality of student results from a series of subjective assessments, examples of which include

•the organisational framework,
•the commitment of teaching staff,
•the trustworthiness of the teaching staff,
•the appreciation of the students by the teaching staff,
•the accessibility of the teaching staff,
•the reliability of the teaching staff in terms of their statements.

Fig. 18

Significance of intercultural competence

approximately 30% of students at universities having gained experience abroad in their first or Master's course

- 9.1% students in the dual system indicate that they have already completed one semester abroad

Broken down by subject groups, only

- 6.5% students of engineering sciences and
- 13.2% students of economics

in the dual system have completed a semester abroad

Fig. 19

Significance of intercultural competence

The question "What in your opinion does completion of a semester abroad depend on?"

7,616 replies (multiple answers)

- Respondents most commonly considered approval by the enterprise (57.6%) to be decisive,
- followed by the availability of funding (56.5%),
- promotion by the enterprise (39.1%), and
- the workload during the course (37.9%).

Fig. 20

Significance of intercultural competence

Intercultural competence is characterised by:

- intercultural sensitivity, openness, flexibility, self-assuredness
- respectful behaviour and openness
- increase in communicative competence
- empathy as a predictor of reduced cultural shock
- improvement of self-assuredness
- flexible handling of new situations
- language skill as a predictor of effectiveness
- verbal and non-verbal competence
- motivation and intercultural knowledge
- awareness of cultural differences
- communication skills and intercultural self-confidence
- significant for appropriateness of assessment

Fig. 21

Significance of intercultural competence

Intercultural competence cannot be outlined as a canon of fixed characteristics and knowledge. In addition to specific knowledge of other cultures, it is primarily a basic attitude with very different characteristics, such as "cultural sensitivity" and "performance-related competence". A period of study abroad by students in the dual system primarily promotes cultural sensitivity as a tolerant, appraising attitude and an unprejudiced perception of foreign cultures.

To summarise, the main concern is to arouse an awareness of the cultural backgrounds of feeling, thinking and acting as well as the relativity of world interpretations and promote the readiness and ability to reflect on one's own and foreign behaviour against this backdrop.

Fig. 22

Bachelor of Science in Mechanical Engineering – Production Technology

HOW DOES DUAL HIGHER EDUCATION FUNCTION?

Duration: four years

Higher education institution: Hochschule für Angewandte Wissenschaften Hamburg (University of Applied Sciences, Hamburg)

Schedule:

- Introductory programme with all students as preparation for entry into the faculty
- Basic technical training in the training workshop: metalwork, electrical engineering/electronics, jointing methods, pneumatics and technical communication
- Practical phases: average of ten weeks' deployment in various departments, e.g. production, development and design, quality control, operating and testing equipment construction
- Theoretical semesters: six semesters (a semester lasts approximately 18 weeks)
- Period of study abroad possible

WHAT DOES THE ENTERPRISE OFFER ME?

- Work in a team from the outset – e.g. in a development team or in various training projects
- Projects for which it is worth working
- 30 days' leave and flexible working hours
- Fair pay: salary above EUR 920 while still in the first year of study, plus 13th month's salary
- Wide range of seminars, training courses and workshops
- Large number of coursemates in the group of students with whom to exchange ideas
- Fixed contact person: your trainer and training representative from the respective subject area always have time for you
- Guarantee of continued employment: at least twelve months' continued employment after completion of training

Training syllabus
Dual higher education course in mechanical engineering

Timing and organisation of content in the training enterprise

Areas of study	Supervision by (abbreviation of dept.)	Number of weeks
Company organisation, legal form and structure, occupational health and safety and accident prevention, environmental protection, teamwork	All departments	
Basic course in metal	GM	8
Welding and soldering	SL	4
Course in turning and milling	DF	6
Occupational health and safety seminar	AS	1
Course in forming	UG	2
Company workshops (training)	BW	9
1st semester of study including preliminary courses	University	20
Company workshops (training)	BW	6
2nd semester of study	University	18
Course in control technology	ST	2
Course preparation	LV	4
3rd semester of study	University	18
Company workshops (training)	BW	18
Course preparation	LV	4
Operations and resources scheduling	AV	6
4th semester of study	University	18
Quality assurance or engineering design department	OK	5
5th semester of study	University	18
Project management	PM	6
6th semester of study	University	18
Practical semester (deployment in target department)	ZAbt.	14
Bachelor thesis	University	12

The student is entitled to 6 weeks of leave in accordance with collective pay agreement.

Subject to change for operational reasons.

Record of training and activity no.:

Name: _____

Department: _____

Week no.: **from** **to** **year of training**

Day	Work performed, tuition received, etc.	Individual hours	Total hours
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
	Hours per week		

Student Signature and date	Trainer Signature and date	Legal representative Sign of approval and date

Training order / Assessment sheet

Department: FAO

From week no.: 2015 - 2018

Trainee: Date of birth:

Personnel no.:

Course: Year:

Leave from week: to week:

Assessment of the students in the dual system

		always	mainly	intermittently	seldom
The dual-system student	**Skills**				
	carried out the work thoroughly and conscientiously				
	implemented the working methods learnt				
	carried out the necessary work independently				
	Cooperation/teamwork				
	worked constructively with the skilled workers				
	appeared ready to help and friendly				
	behaves respectfully towards the team and the skilled workers				
	was able to accept and respond to criticism				
	Powers of comprehension				
	quickly grasped the contents and facts of the matter				
	completed the assignments delegated without help from the skilled worker				
	Care and attention				
	handled the working and measuring equipment with care				
	maintains the workplace in a clean and orderly state				
	pays attention to the quality requirements				
	Interest and reliability				
	showed interest and initiative				
	did not shy away from difficult tasks				
	showed stamina even under difficult conditions				
	completed his/her work while observing the regulations and instructions				

WHAT DO I NEED FOR THE DUAL SYSTEM OF HIGHER EDUCATION?

- Entrance qualification for university of applied science or Abitur ('A' level equivalent).
    - Minimum average grade overall on school-leaving certificate: 2.5
    - Grade higher than 5 in the crucial subjects: maths, physics, German, English
- Minimum average grade in these subjects: 3.0
- Fun and interest in technology
- A desire to tackle issues and master challenges
- A clear head in order to understand and analyse interconnections
- Passion, commitment and large portion of curiosity

5 Assessment of the training process for students within enterprises

5.1 Assessment contents for the students within the enterprise

The quality of vocational training in Germany has been secured historically by means of standards, structures and procedures, in other words by a comprehensive body of rules. Accordingly, the chamber of industry and commerce or the chamber of handicrafts stipulates that the vocational training agreement for the apprenticeship to become a skilled worker has to contain organisational details of the content and timing (training course plan).

For dual-system students on a course integrating an apprenticeship, the enterprise has to draw up a specific training plan based on the general training plan but adapted to the in-company and individual conditions for the dual-system student in question.

There is nothing comparable for dual-system students on a course integrating work experience. They study and work without any entitlement to a recognised training concept and are dependent upon the enterprise voluntarily agreeing the study contents and objectives with them.

When asked whether they had been given a written training plan at the beginning of the dual course of study and their work within the enterprise, of the students on courses integrating work experience, only approx. 33% in small enterprises (up to 49 employees) compared with approx. 60% from the largest enterprises (with 1000 and more employees) indicated that they had received a training plan.

For students within the dual system (especially in courses with an extended practical component), the absence of transparent standardised training requirements means that an enterprise-specific specialisation takes place, which is heavily dependent upon the quality of the learning venue "enterprise" and hence on the competency profile of the training officers within the individual departments. Practical experience alone cannot be equated with training. It represents only a limited communication of key qualifications and specialist knowledge with respect to a product or service within a department and does not provide a sufficient basis for a qualified programme of training as an engineer, for example. The heavy concentration on the training within the company, in line with the strategy of training on the job, may lead to a limited communication of vocational training. Promoting a company-related specialisation of the students additionally restricts the competency profile and becomes a disadvantage in the further professional development of the dual-system students, particularly when a change of employer takes place.

In other issues of training within the enterprises, we refer back to the activities of the dual-system students within the specialist departments. Here it can be seen, on the one hand, that the majority of respondents, namely 94%, are informed of their new tasks through an interview. Only in 27.8% of cases is the description of tasks involved in the activity communicated to the students in written form. To

conclude the activity within a specialist department, approx. 60% of the students are informed of whether they have achieved their training objectives within the framework of an interview. A slightly smaller percentage of 56.6% additionally receive a written assessment, and approx. 26.4% have themselves written a report on their activity. A proportion of 4.6% receive feedback by other means, while 16.4% of students receive no assessment.

An examination by study model reveals that students of the engineering sciences indicate more frequently that they have had to prepare a report on their activity while students of economics are apparently more frequently notified of their achievements by interview and written assessment.

The majority of students, in a proportion of approx. 90%, are themselves able to give feedback on their assignments and activities in the specialist department. The most common form here is the interview, as indicated by approx. 90% of respondents, followed by an additional written assessment, e.g. in the form of an assessment sheet (just under 40% of respondents).

Many enterprises appear to have the aim of introducing dual-system students to demanding assignments at an early stage[1] and thus deploying them in a manner suited to their training and qualification. More than half of the students surveyed in practice-oriented courses of study (62%) indicate that they were immediately deployed in a specialist department of their respective enterprise at the beginning of their course while one third indicate that this was only the case after a few months. The way in which dual-system students mainly cooperate within the various specialist departments is of particular interest. With almost equal frequency, the dual-system students reported that they had been assigned to a team (approx. 48%) or to an experienced employee (approx. 42%) or been deployed independently as a fully recognised colleague (44.7%). A total of 24.5% of respondents act as floating employees[2]. Almost as many of the dual-system students (25.6%) simply go along with the flow in the specialist departments.

The size of the enterprise has a noticeable impact in that dual-system students tend to be incorporated into a team within the specialist departments or assigned to an experienced employee, while in small enterprises a higher proportion are deployed as independent or floating employees. This point clearly illustrates the high status of dual-system students in demand-oriented human resources planning, particularly for small enterprises, as a means of compensating for any existing personnel deficits. Differences by study model and enterprise size merely occur in relation to two aspects: a greater number of economics students are assigned to a team whereas engineering students are more frequently assigned to an experienced employee.

It has been demonstrated that students within the dual system of study are subject to different levels of loads. In addition to the theoretical studies, i.e. the acquisition of knowledge in the corresponding subject of study, success is also required in gaining practical proficiency. During this process, they not only experience a high level of pressure in terms of work and achievement, but also generally increased pressure of time, which is difficult to master without good time

1 Krone 2015b

2 Floating employees are characterised by their high level of flexibility and ability to work under pressure as well as their above-average level of competency so that they can be deployed as "buffers" in various work processes if any personnel shortages should arise.

management. In line with this appraisal, the dual-system students of economics and engineering that we surveyed attached great importance to **good time and organisational management** as well as to a corresponding level of **specialist skill**. Rated as even more relevant was a pronounced **concentration on the work** and a **high level of individual responsibility**. In this respect, students in practice-oriented courses of study differ significantly in this assessment from those in courses integrating an apprenticeship because they more frequently rank the five listed aspects as relevant and hence as necessary.

5.2 Documents for the assessment of students within the dual system

The documents outlined here for assessing students in the dual system are used in different ways within the individual enterprises. Chapter 7 "Documents for the dual system of study" provides a general overview of all documents that we have received from enterprises. The following may be mentioned in detail with respect to the assessment of students within the dual system of study:

- Assessment sheet for students in the dual system – final interview in the department,
- Record of training and qualification, record of activity – maintained by the dual-system of students and signed off by the departmental head / authorised training representative and course manager from the university,
- Reflections recorded by the students on the practical training measures,
- Training dialogue between trainers and students on the progress and promotion of key qualifications,
- Minutes of the development discussion
- Guidelines for assessing the project reports, course assignments, Bachelor thesis,
- Guidelines for the interim interview,
- Guidelines for the final interview,
- and others, too.

See chapter 7.2

In summary, the documents mentioned above offer a good general view of the performance and personality of a student within the dual system of study as a means of assessing that student.

5.3 Workshop description

Assessment of the training process for students within enterprises

Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective.

Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome.

The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of this workshop is to develop an assessment concept for the dual system of study with extended practical component. The participants are intended to record various forms of assessing students within the dual system.

Workshop schedule:
Discuss the document "5 Assessment of the training process for students within enterprises".

- Develop a model for assessing the training and qualification process for the dual system of study with extended practical component.
- Develop an assessment plan for the dual system of study with extended practical component for semesters 1 to 6.
- In small groups, discuss the content design of the various assessment forms for semesters 1 to 6.
- Write the essential contents of the assessment forms on cards and fasten them to the pinboard.

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as a text and photos

Working resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantity.

Figure 1 to 8 – Chapter 5

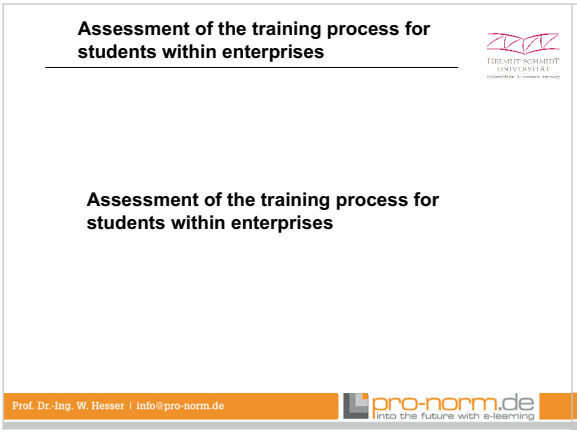


Fig. 1

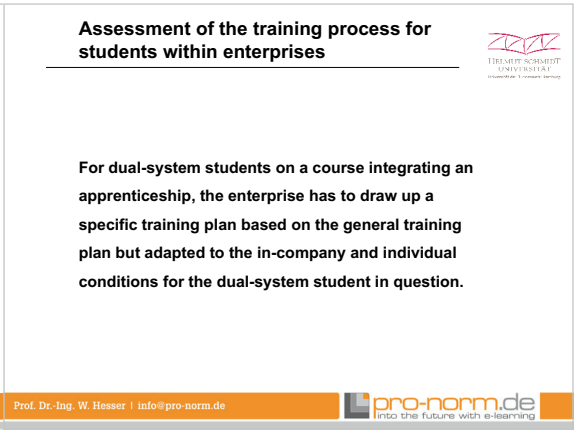


Fig. 2

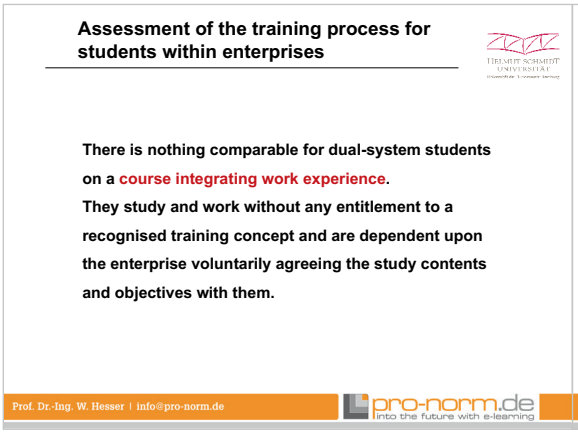


Fig. 3

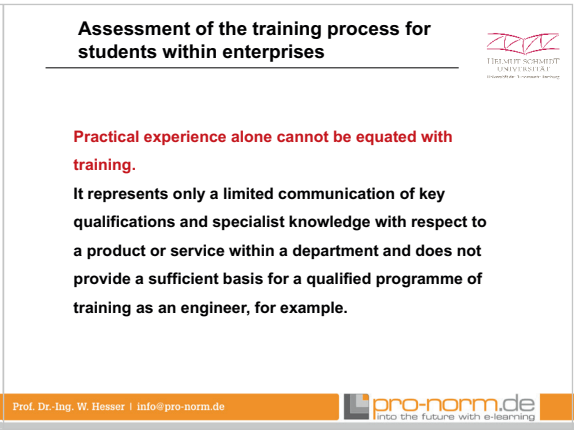


Fig. 4

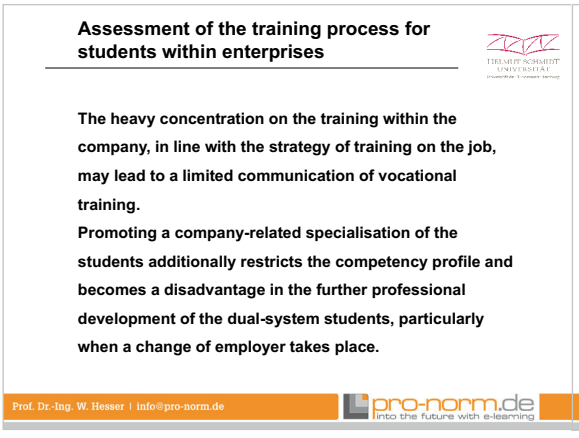


Fig. 5

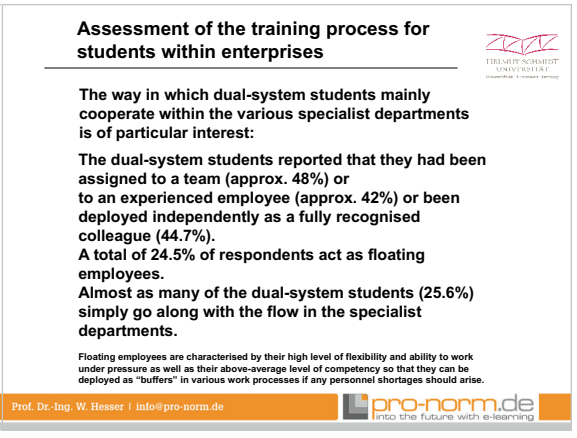
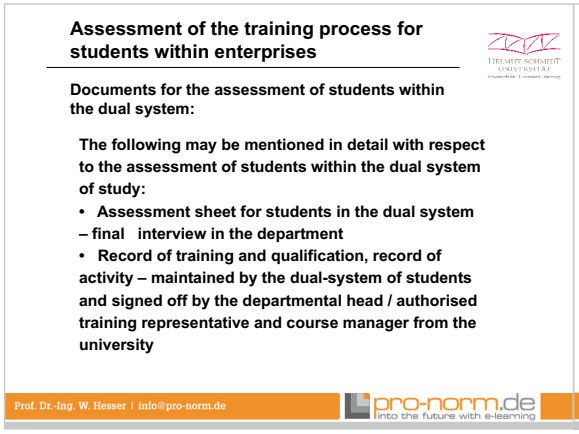


Fig. 6


Assessment of the training process for students within enterprises
Documents for the assessment of students within the dual system:
The following may be mentioned in detail with respect to the assessment of students within the dual system of study:
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Prof. Dr.-Ing. W. Hesser | info@pro-norm.de
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Fig. 7

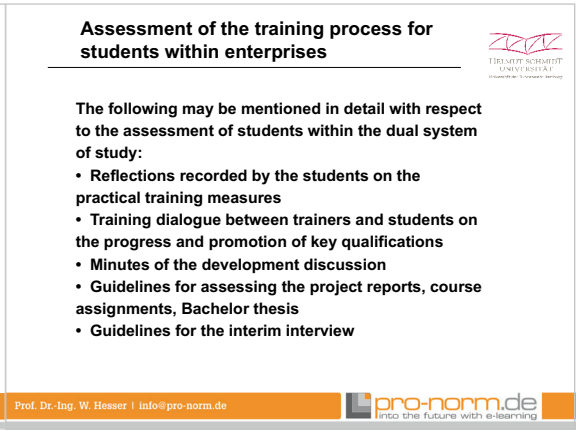
Assessment of the training process for students within enterprises
The following may be mentioned in detail with respect to the assessment of students within the dual system of study:
• Reflections recorded by the students on the practical training measures
• Training dialogue between trainers and students on the progress and promotion of key qualifications
• Minutes of the development discussion
• Guidelines for assessing the project reports, course assignments, Bachelor thesis
• Guidelines for the interim interview
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Fig. 8

6 Management of information, documentation and communication for dual higher education study

Hesser, Wilfried; Tödt, Alexandra[1]; Koch, Karola[2]; Becker, Maximilian[3]

Processes play an important role in quality management (QM) as it may be assumed that appropriate actions make a decisive contribution to generating the highest possible quality of outcomes. In the case of dual higher education, processes are of special importance as it is not only internal university interfaces that have to be managed but also interfaces to external players such as enterprises. Against this backdrop, the following takes a closer look at courses of action related to service processes as well as teaching and learning processes.

6.1 Process management in dual higher education[4]

The organisational coordination between the partners involved in dual higher education – above all university, enterprise, chambers of commerce/handicrafts and vocational schools – forms an important foundation for linking the contents of theory and practice. In particular, students who are already under high time pressure due to the dual task of managing studies and apprenticeship/training or professional activity are reliant upon good interaction between the institutions involved in the dual system of higher education in order to achieve a successful qualification. In the age of IT management, the topic of coordination between the partners involved in dual higher education – above all university and enterprise – has to be approached from the perspective of process management. It is first necessary to point out that the interlinking of the processes between players inside and outside of the university can or should be mapped and standardised, above all in relation to very targeted processes.

The aim is to define a project for managing information, documentation, communication for the players within the dual system of higher education with the processes of

- Introductory talks, completion of contract and cooperation agreements between university and enterprise,
- Selection and admission of dual-system students by enterprise and university,
- Information and communication management between students, university and enterprise,
- Documentation management between students, university and enterprise,

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1 Tödt, Alexandra; leifos GmbH
2 Koch, Karola; Helmut Schmidt University
3 Becker, Maximilian; Databay AG
4 Qualitätsentwicklung im dualen Studium; [Development of quality in dual higher education] Volker Meyer-Guckel, Sigrun Nickel, Vitus Püttmann, Ann-Katrin Schröder-Kralemann (Ed.); Stifterverband der Deutschen Wirtschaft. ISBN: 978-3-922275-64-0; see page 81

- Interlinking of the learning venues of university, enterprise and vocational schools.

At the centre of the process management employed are steps that each have the effect of assuring and promoting quality:

- The mapping (modelling) of the processes examined and their partial steps, taking account of the associated responsibilities.
- The cooperation of those involved in the process in order to identify and remedy problems in the process routine, such as coordination problems or duplicated work.
- The preparation of the process models devised, including further information such as checklists.
- The definition of sample documents that can be actively communicated to all those involved in the process.

The results worked out during the course of process management are prepared in the form of process routines and additional documents. Here it is also necessary to take account of further information on the processes such as fundamental laws, deadlines and contacts.

A general working group with representatives of the universities, students and partner processes has to be founded for the processes to be developed. Here the aim in particular is to involve the cooperation partners more intensely than before in designing the processes of the dual higher education programme. The number of members in the working group should not exceed 10 and should change according to the topic.

Visualised process sequences and the transparency created is therefore able to rectify a fundamental problem of dual higher education as a complex process, namely that in some cases many participants have barely any knowledge of the processes in areas of work beyond their own particular field.

In the area of teaching and learning processes with the interlinking of the learning venues university and enterprise, an especially large demand for transparency and standardisation is to be expected as the processes are very complex and all those involved exhibited a high demand for information.

Standardised documents are an essential constituent of the process management. They are stored together with the flowcharts of the standardised processes in an IT system that the universities have to agree on with the enterprises. The aim is to provide the players in the dual system of higher education with the appropriate information, documents and forms at every stage of the process.

In the dual system of study in particular, the provision of standardised documents is especially helpful as a means of structuring what is in any case the very complex need for coordination between participants within the university and external players within enterprises.[5]

5 Qualitätsentwicklung im dualen Studium; [Development of quality in dual higher education] Volker Meyer-Guckel, Sigrun Nickel, Vitus Püttmann, Ann-Katrin Schröder-Kralemann (Ed.); Stifterverband der Deutschen Wirtschaft. ISBN: 978-3-922275-64-0; see page 81

6.2 Information, documentation and communication in various structures

Models are proposed on different levels in order to achieve a transparent design of information, documentation and communication.

6.2.1 Level 1

Formations that extend beyond the boundaries of organisations are associated with special problems. Dual higher education courses extend beyond the organisational boundaries of the universities and enterprises and the particular problems here are the coordination of the curriculum between the participating organisations and the creation of an up-to-date level of information for the specific parties involved.

Requirements – non-functional

- Information and communication resources should be made accessible for the university and the responsible areas within the enterprise.
- Automated notifications of changes shall be deposited in the relevant organisation's own channels. The altered status must be accessible for all participants in a manner compliant with data protection.
- Information and means of communication have to be prepared in a user-friendly manner for mobile devices.
- Information and communication resources should only be available for the responsible persons in line with the supervision concept. Other persons should not have access.

Filing cabinet

Documents are located on the university's learning platform in a separate public area, which is not accessible via the normal starting page and which has its own URL, e.g. "Coordination of dual higher education programme – Documents". Examples of the documents available for download here include the following:

- Cooperation agreement between university and enterprises,
- Sample educational contract for course with extended practical component (Bachelor course),
- and others, too.

In this way, all participants are able to access the sample documents, even people from the enterprises.

Individual, documentation, coordination and communication

All course coordinators arrange for a portfolio template to be designed for their courses. The following tabs may be contained within them:

- Entry of "Personal data" and "My Courses" as a record for the basic qualification (see below),
- "Blog" for study diary and comments as a record of mentoring and other supervision (see below),

- "File exchange" page,
- "Mail" page,
- Training development plan,
- Personnel development plan.

This portfolio template is associated with an exercise that reflects the course procedure.

1st	semester	basic training accompanied by a mentor.
2nd	semester	training development plan / personnel development plan.
3rd	semester	training development plan / personnel development plan.
4th	semester	training development plan / personnel development plan.
5th	semester	personnel development plan.
6th	semester	personnel development plan.
7th	semester	Bachelor thesis.

Students begin their course of studies and create a portfolio. They share this with the responsible course coordinator at the university, their superior within the enterprise, their responsible mentor, etc.

The required functionalities are already implemented today in the ILIAS software. There are still proposals for improvement in some areas.

Need for improvement

- File exchange page in portfolio must allow persons with whom the portfolio has been shared to upload files.
- Mail page must enable persons with whom the portfolio has been shared to enter external e-mail addresses in order to send e-mail without any ILIAS access.
- If changes are made to the portfolio, all persons with whom the portfolio has been shared will be notified automatically by e-mail.
- More user-friendly sections of portfolios.

Advantages

- The portfolio is clearly in the possession of the student.
- Real-time overview of all participants across organisational boundaries as well as automatic notifications.
- No major configuration effort.
- Transparent communication via comments and e-mail.

Level 1 offers a framework of general information as standardised forms in a generally accessible folder and documents achievements by students in e-portfolios. The filing cabinet is accessible to all players who are provided with generally accessible standard forms for further processing. The contents to be processed as required by the form under the respective general organisational conditions are inserted into an e-portfolio by the students. In each case, the relevant contents can be predefined as a self-explanatory identifier in a portfolio template. They then appear as a standardised bar in a student's relevant e-portfolio. Students are

responsible for the release of their e-portfolio and are obliged to grant access to their supervisors both in the university and in the enterprise.

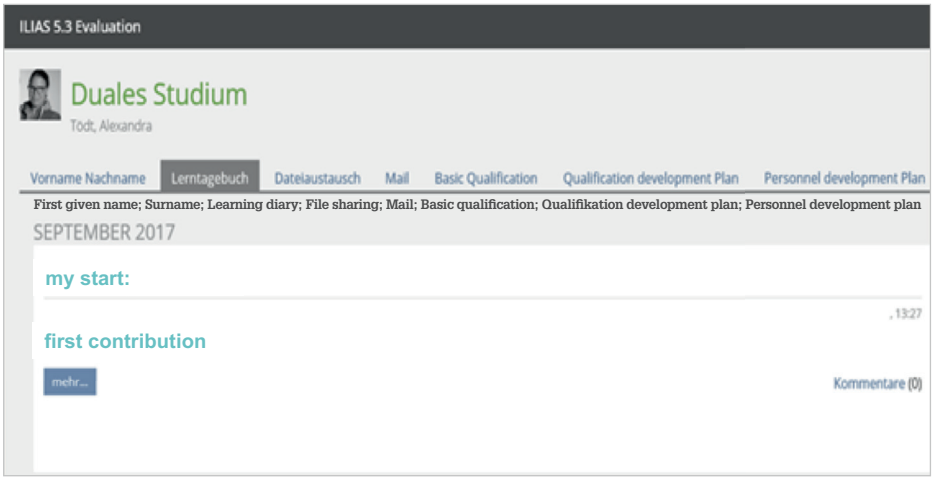


Fig. 7 – Chapter 6

6.2.2 Level 2

Through the information and communication technologies (ICT), the educational sector in the Federal Republic of Germany has undergone lasting changes in the previous three decades. Since the 1980s, e-mail has been established as the main means of communication, and the university computing centres were already issuing e-mail accounts to university members throughout their establishment back in the 1990s. As a result, it became possible not only to work much faster but also on an international scale within a powerful network. In the meantime, the information and communication technologies, such as content management systems, study management systems, virtual classrooms, campus management systems, examination platforms, online catalogues, subject-related databases, e-books and evaluation software, have long since become part of the basic equipment of a modern university or higher education establishment.

In order to take account of this development within the context of our approach to supervising students in the dual system at universities and colleges of advanced vocational studies, the following text describes an information, documentation, communication and coordination system for the dual higher education programme, with the aim of facilitating the provision of information to students in an extensive and transparent manner and enabling a comprehensive system of communication with the students. At the same time, we also wish to give consideration to better networking of university and enterprise – and here in terms of a jointly supported successful supervision of the students within the dual system.

1. Central documentation of all necessary information for the students in the dual system

The documentation has to be stored so that it is accessible centrally for the university and the responsible divisions within the company. It must be kept updated (changes are notified via messages in real time) and, wherever possible, the information should be maintained in a form that is transparent for university, enterprise and dual-system students. Here it is important to ensure that access to the necessary information (uploading and downloading of documents by app) is independent of platform and is also guaranteed on mobile devices, e.g. iPhone, Android or tablet PCs.

To ensure that the information is transparent for the students, it is stored in a hierarchically structured folder system that is accessible to all representatives for dual-system students from university and enterprise in accordance with the supervisory concept. All software systems (such as ILIAS or SharePoint) that enable a folder structure with a granular rights structure such as RBAC (Role Based Access Control) are suitable for this. Systems considered for a central storage system may include an application in the Cloud (here it is absolutely essential to observe security aspects of data protection) and also a system installation both in the university and in the enterprise with bilateral references to shared folders. Access for university members and the enterprises can, for example, be guaranteed via a Shibboleth server with the appropriate authorisations.

2. Connecting and communicating with the students in the dual system

Optimum supervision requires both central documentation and the interlinking of the representatives for the dual higher education programme in the university and enterprises with the students in the dual system. At the same time, there should be interlinking of the peers among themselves and with the tutors. A distinction needs to be made here as to which player is communicating with which objective. Various different communication media and devices are used for connecting the different players with each other and among themselves, according to the objective.

Description of a central documentation system for students in dual higher education

University (1)

On the first level is the folder for the full-time coordinator for all courses of study (1). The coordinator has write and read privileges to this folder and stores the relevant documents for all courses of study in accordance with the access authorisation for the respective users (access authorisation can be regulated via RBAC, e.g. in the case of SharePoint or ILIAS). This is the location of various form folders among other items, with examples including

- Cooperation agreement between university and enterprises
- Contract between students and enterprises
- Sample educational contract, course with extended practical component (Bachelor course)

- Sample educational contract, course with extended practical component (Master course)
- and others, too.

Ideally, every student will have reading rights to this folder.

University (2)
On the second level both the full-time coordinator of all courses of study (1), and **the university representative for the dual higher education programme (2)** have reading and writing rights. The university representative for the dual higher education programme is, for example, responsible for convening the working group for organising and coordinating the theory/practice modules. The information in these folders is accessible by reading right to all professors and students.

University (3)
On the third level both the full-time coordinator of all courses of study (1), the university representative for the dual higher education programme (2) and the university representative for the higher education programme for the respective course (3) have reading and writing rights. The university representative for the dual higher education programme for the respective course reports to (4), (6) and (7).

The folder is accessible to students via reading rights. Function account: tickets in OTRS.

University & Enterprise (4)

The university representative for the training phases of the students within the enterprises (4) acts as an access coordinator for the students to the respective theory/practice modules in the enterprises. At this point, the theory/practice modules are stored in accessible form via reading right for all students as sub-folders. The representative assigns the relevant theory/practice modules to the respective students and allocates them a separate area, such as a separate group, within the relevant theory/practice module. Reading and writing rights to this folder are held by (1), (2), (3) and (4).

Theory/practice module accessible to course participants, below which the areas (groups) of each of the assigned students are located. The respective representatives in the university and enterprise have access (**shared folders**).

Separate area of student "John Smith" to which the respective representatives in the university and the corresponding enterprise have access. These are as follows:

- Professor of the university,
- Head of department in the enterprise,
- Representative of the training department,
- Personnel department within the enterprise,
- Tutor (to a limited extent).

Enterprise (5); Personnel department
The folder of the representatives of the personnel department within the enterprise (5). This folder is not public. Only the personnel department of the respective enterprise hold reading and writing rights.

Enterprise (6); Training department
The folder of the representatives of the training departments within the enterprise (6). Reading and writing rights to this folder are held by (5) and (6). This representative is responsible for

- Supervision,
- Management,
- Progress of studies,
- Training plan,
- Projects.

Enterprise (7); in the specialist department
Writing and reading rights to the folder of the representative within the enterprise in the respective specialist department (7) are held by (5), (6) and (7).
- Issuing of assignments to the students in the department,
- Examination of the practice reports by the students in the department,
- Drafting of the competency profile for the students in the department.

The areas of the students are linked into the folder of the representative within the enterprise in the respective specialist department or point to the students' areas as a reference under (4). At the same time, all the rights are retained.

In the students' areas it is possible to store the practice reports, create a competency profile, maintain a study diary or fill a portfolio, as well as many other tasks.

University (8), (9) and students
Tutors (8), student representatives (9) and the students each have their own areas within the software environment used.

Connection and communication in the dual higher education programme

Selection of the relevant means of communication in each case depends upon:
1. The respective operators and addressees (senders and recipients) within the communication process (formal or more informal relationship, position within university or enterprise, and the like),
2. The purpose of the communication (e.g. changes in the documentation, questions on the theory/practice module or networking amongst the students themselves in the sense of peer coaching),
3. The direction of the communication, i.e. is communication taking place, unilaterally, bilaterally or multilaterally or is single-stage communication involved, i.e. 1 sender and 1 recipient or multistage communication, i.e. 1 sender and several recipients,
4. The nature and the context of the communication (e.g. general issues, company-specific communication, important or less important messages, long or short messages, and the like),
5. Means of communication or communication channel.

These five points determine whether each individual case involves information, communication, interaction or cooperation between the operators or addressees.

The more the "communicative" activity belongs to the work process, the more it will involve interactive or cooperative activity.

Case 1 → may include levels (1) to (7):

1. Tends to be more one-sided communication: may include all (professors, students, representatives within the enterprise): professors of the cooperative state university or professors within a course among themselves, representatives with the professors in the university and course, all representatives among themselves, representatives with the dual students in the course all of the dual-system students within the course, and other scenarios, too,
2. Announcement of dates, events, examination requirements, changes in theory/practice modules and the like,
3. Unidirectional or bidirectional,
4. Tends to include more general questions.

Means of communication or communication channel of choice: E-mail distributor, central forum with threads for each course of study and semester as a noticeboard: access for all, forum for each course with threads per semester with access rights for the professors in the course, heads of department in the enterprise, representative for the training position within the enterprise, tutors, students.

Case 2 → may include levels (1) to (7):

1. Tends to be two-sided communication: direct enquiry from a student to a specific contact person or to a representative in the university and enterprise, etc.
2. Specific questions on studies, course of study, examinations, on theory/practice modules, etc.
3. Bidirectional
4. Tends to be personal/confidential communication on all levels in university or enterprise.

Means of communication or communication channel of choice: Ticket system (function accounts for administration, representatives among others), function e-mail account, on-screen chat and the like

Case 3 → may for example include Levels (3) and (4) and (6) and (7):

1. 1. Tends to involve two or more sides: Exchange between professors and students or students in the module, heads of department and student or students, student and tutor, etc. on matters such as subject-related questions, problems, subject-related explanations, preparation and follow-up work for assignments, etc.
2. Bidirectional or multidirectional, heading towards interaction
3. Subject-related and/or company-specific communication relating to specific assignments.

Means of communication or communication channel of choice: Chat or on-screen chat or virtual classroom to accompany the project procedure, supplemented by

shared study journals, forums in the respective training department within the enterprise for permanent documentation of the questions including access rights for heads of department, supervising professors, students and tutors if necessary.

Case 4 → may for example include (8) and specific students:

1. Tends to involve two or more sides: tutorial supervision of the students or peer-to-peer coaching (students coaching other students)
1. Questions and problems relating to specific technical assignments that do not belong to the level of a full-time representative
1. Bidirectional or multidirectional communication towards interaction and cooperation
1. e.g. subject-related assistance or peer feedback, among many others

Means of communication or communication channel of choice: Collaboration in teams or learning groups, possible joint editing of documents or study journals (corrections, annotations, comments): releases in the Cloud for joint document editing (e.g. the cloud applications, Office 365, Google One Drive or OwnCloud with the plug-in for Libre Office for joint document editing – can also be integrated into ILIAS, for example, via the Cloud object), in addition on-screen chat or VC with access rights for tutors and students, connection via non-public Twitter accounts for brief enquiries or also e-mail messages with the respective intended addressee for the message.

Case 5 → includes students:

1. Multisided communication between students,
2. Social networking for students,
3. Multidirectional communication,
4. Also addresses issues such as personal aspects within the study programme, has a private connotation.

Means of communication or communication channel of choice: Use of social media such as closed Facebook groups, non-public Twitter accounts when internal university questions affecting students are concerned, public Twitter accounts for general aspects (mixing socially and the like), student area in the respective software environment within the university with all the available communication tools.

Level 2 Documents, information and the flow of communication that are not generally accessible, i.e. are intended to be accessible to course participants within the university and/or within the enterprise, should be filed in a folder hierarchy with access authorisation. This concerns, for instance, coordinated theory/practice modules to which certain groups of persons should receive access authorisation in relation to organisational hierarchy, confidentiality, data protection, etc. in accordance with the university and enterprise agreement.

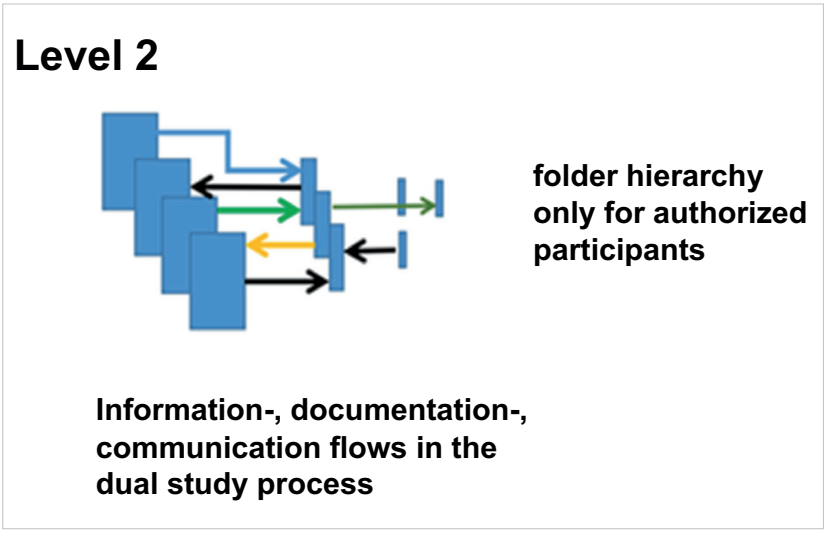


Fig. 9 – Chapter 6

6.2.3 Level 3

The document "System of information, documentation, communication and coordination for dual higher education study" presents a description of the players and of their tasks and rights within a folder structure in the dual higher education system and not a structure for the communication of information. An information and communication structure is based on the information and communication processes in which the individual interactions take place concerning who exchanges information with whom and in what form.

Modelling with BPMN – Business Process Model and Notation – is recommended and this is based on the document structure as well as on the documents and the description of the information and communication processes. This tool describes which action(s) is/are carried out on which object(s) for which player(s).

The ILIAS Workflow Engine can be deployed as implementation software. The software provides an opportunity to map complex processes of information and communication with the necessary rights structure.

The ILIAS Workflow Engine can be described as follows: with the Workflow Engine for ILIAS it has been possible since Version 5.2 to capture process models in the BPMN2 modelling language and enable them to be executed in ILIAS. There is already good coverage of the graphic elements of BMPMN2 for flow control and presentation. Furthermore, there are also a number of so-called activities, with which manipulations can be carried out on ILIAS data sets in accordance with the models. The first use cases led to good coverage in the field of managing membership in courses as well as tests. Other activities as components for the support of process models are possible at a low cost and can also be implemented on a lasting basis in the product with the respective approval of the steering bodies of the ILIAS association without an overall consideration of the requisitioning process being necessary. As a result, the creation of a process with the aid of BPMN2

simultaneously provides an opportunity to carry out adaptations based on such a model to the actual relations and requirements of the institution making use of it. The arrangement and times and conditions of execution of such actions have to determined on an organisation-specific basis while the actions themselves are available independently of this in all scenarios.

With a view to the future, the Workflow Engine thus simultaneously acts to simplify the user interfaces in ILIAS by enabling particular options for process control to be removed from the interfaces and to make the system more flexible as the variety of the execution options for certain processes now no longer have to be anticipated by software developers.

Level 3 In order to be able to identify and effectively link up processes and players in terms of information, communication and organisation, the necessary processes have to be analysed and documented. For instance, changes to relevant documents in certain folders, such as theory/practice modules have to be brought to the attention of relevant persons. The process sequences have to be described in a notation such as BPMN2 and uploaded as process definitions for mapping a workflow in the software (compare ILIAS Workflow Engine). This interlinks players, objects and actions in a targeted manner.

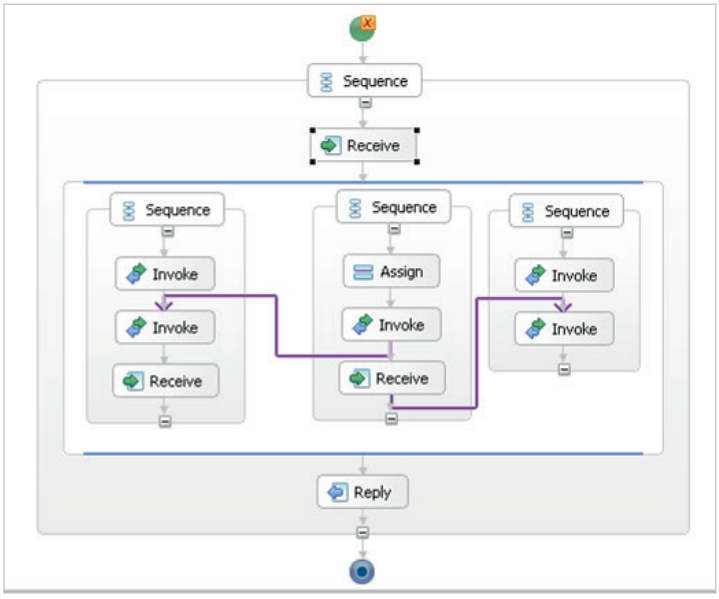


Fig. 11 – Chapter 6: Workflow Engine ILIAS Version 5.2 making process models executable in ILIAS in the BPMN2 modelling language.

6.2.4 Definitions

App – application software for mobile devices

ILIAS – study management system

SharePoint - SharePoint is a web application from Microsoft which covers fields such as the following:

- Cooperation, for example the administration of projects or the coordination of assignments,
- Social networks, for example via personal web pages, team web pages, discussion groups and blogs,
- Internet portals.

RBAC – Role Based Access Control is a procedure for the control and monitoring of access to files or services within multi-user systems or computer networks. The RBAC model was passed in 2004 as ANSI standard 359-2004.

Cloud – online-based storage and server services

Shibboleth – The Shibboleth concept means that users only have to authorise themselves once on their home device in order to access services or licensed contents from different providers independently of location.

Peers – a group of persons of the same age or status in sociological terms

Peer-to-peer coaching – students help other students

OTRS – a software package for IT service management

On-screen chat – chat is available on every page of a web application

6.3 Workshop description

Information, documentation, communication and coordination system for dual higher education study

Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective.

Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome.

The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of the workshop is to enable participants to gain a view of their own institution (university) and present their organizational structure as an example for implementation within a software system.

Workshop schedule:

- Discuss the contents of the document "Information, documentation, communication and coordination system for dual higher education study"
- Which players are named in this document?
- Write down the players on a card. Place these cards on the pinboard.
- Describe and plot the flows of information and communication between the players.
- Can you apply the IT equipment of your university for the information and communication processes within the dual higher education programme?
- What form might a system of IT support take and what functionality would you like it to have for the dual higher education programme?

Note: The organisational prerequisites may be existing posts, responsibilities, etc, for a dual higher education programme at the university. These prerequisites need to be described, named and their function identified within the organisation chart for a dual course of study.

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as text and photos

Working resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantity.

Figure 1 to 12 – Chapter 6

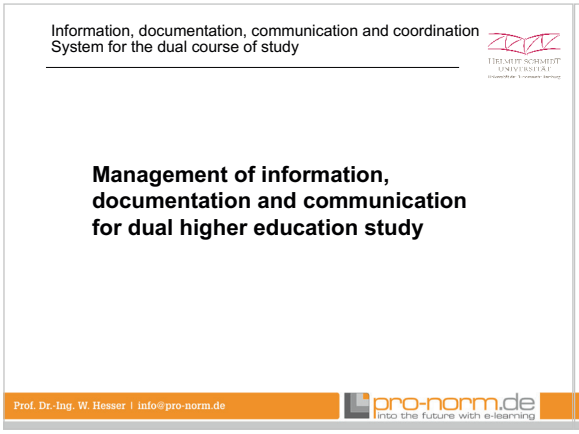


Fig. 1

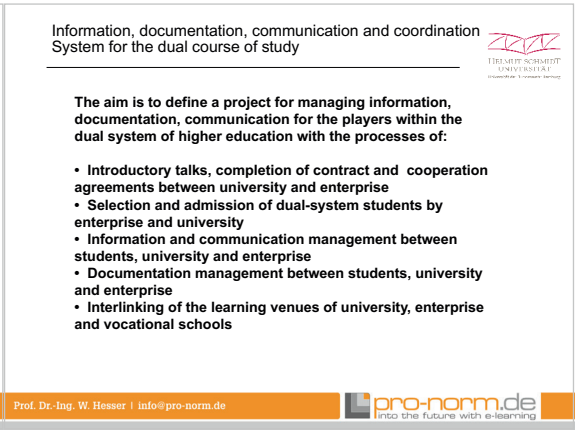


Fig. 2

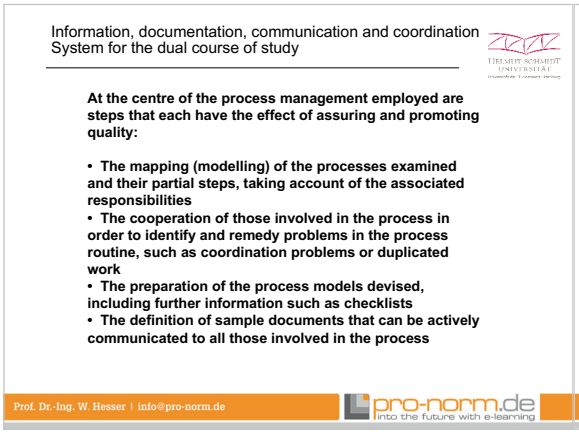


Fig. 3

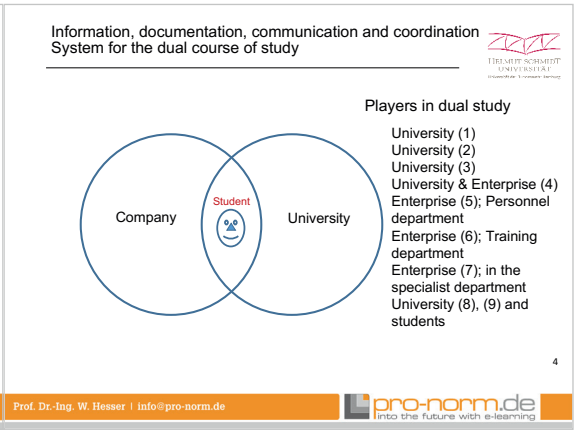


Fig. 4

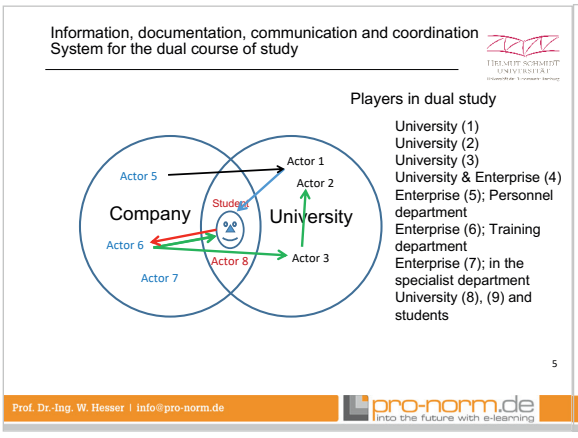


Fig. 5

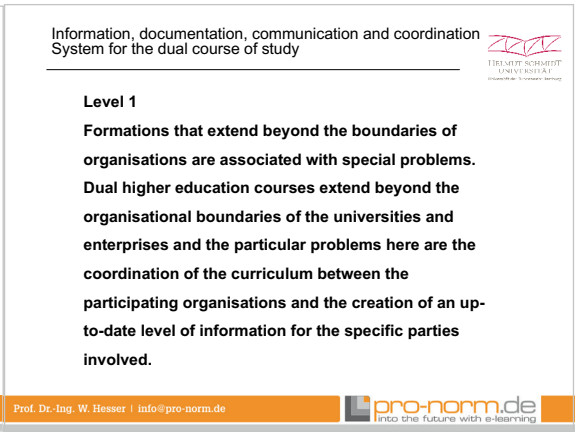
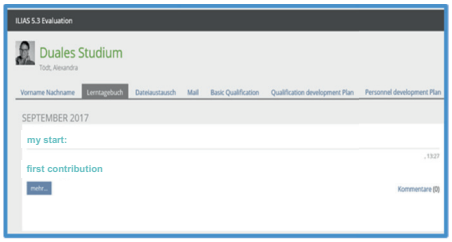


Fig. 6

Level 1 E-portfolio for students



First given name; Surname; Learning diary; File sharing; Mail; Basic qualification; Qualifikation development plan; Personnel development plan

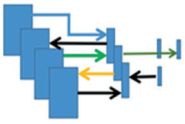
Fig. 7

The information and communication technologies, such as content management systems, study management systems, virtual classrooms, campus management systems, examination platforms, online catalogues, subject-related databases, e-books and evaluation software, have long since become part of the basic equipment of a modern university or higher education establishment.

Fig. 8

Level 2 folder hierarchy with access authorization

Level 2



folder hierarchy only for authorized participants

Information-, documentation-, communication flows in the dual study process

Fig. 9

An information and communication structure is based on the information and communication processes in which the individual interactions take place concerning who exchanges information with whom and in what form. Modelling with BPMN – Business Process Model and Notation – is recommended and this is based on the document structure as well as on the documents and the description of the information and communication processes. This tool describes which action(s) is/are carried out on which object(s) for which player(s).

Fig. 10

Level 3 Workflow Engine ILIAS Version 5.2

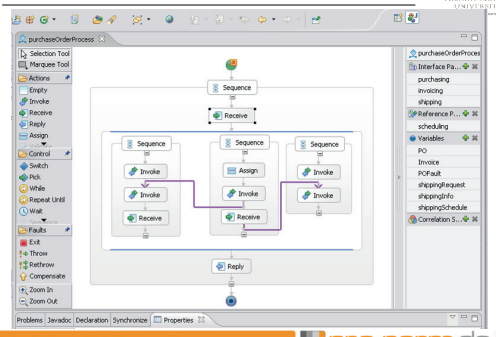


Fig. 11

Level 1

General Forms in the forms folder

E-portfolios, shared between university, company and student

E-Portfolios

Level 2

folder hierarchy only for authorized participants

ILIAS Management-system

1. Semester
2. Semester
n. Semester

Level 3

Fig. 12

7 Documents for the dual system of study

7.1 Documentation for the dual system of study, basis for accreditation/certification

Documentation is a key element in the development of a dual higher education course.

Documents have to be developed for the academic field of the dual higher education study as well as for the training of the students within the enterprise.

The higher education study is essentially based on fundamental documents such as:

- Course curriculum,
- Module manual for the course,
- Examination, study and internship regulations,
- Diploma Supplement,
- Contract between enterprise and students,
- Cooperation agreement between university and enterprise,
- Matriculation documents,
- and others, too.

The course curriculum describes the rules for the progress of a course of study at a university, see also study regulations. The curriculum contains a precise ruling and specification of all learning objectives and study contents as well as the accompanying processes and organisation of learning. The main contents of a curriculum are drawn up and described in a commission for the respective subject and, depending on the federal state in Germany, are subject to specific approval proceedings. The curriculum additionally describes what competencies are to be expected from the students and are not only of a subject-specific but also a process-related nature. Personal and social skills are described explicitly.

The module manual is the centrepiece of the documentation for a course of study. It primarily addresses the students and sets out the structuring elements of the curriculum (modules) in terms of their contents, but above all in terms of the learning results they strive to achieve and the competencies to be acquired. In addition, it explains formal aspects of the modularised course such as the extent of the modules (in credits), the ratio of on-site and self-learning phases, the types of examination, any prior knowledge required, and so on. The module manual is the document with the greatest external effect as it is made available to the students in coordination with the ECTS agreements generally as a paper printout or on the Internet. The module manual has to depict the current status of a course.

Examination, study and internship regulations

The purpose of the examination, study and internship regulations is to set out the structures of the course. They are at the same time a regulatory framework and the legal basis for the course. Responsibility for the legal audit of the examination, study and internship regulations lies with the universities. In the German federal

states, different provisions apply with respect to requirements for the existence of study regulations.

Diploma Supplement[1]

The Diploma Supplement is a prescribed public document introduced in connection with the creation of the uniform European Higher Education Area (the so-called Bologna Process) to record the completion of a course of study in accordance with the ECTS modularised programme. The document is issued by the responsible academic office (generally the office of examinations, academic registrar or the like). It is either handed over together with the examination certificate or upon application by the candidate. It can be produced in any desired language; an English version is customary alongside that in the specific national language. The diploma supplement contains a detailed explanation of the course completed. The structure of the document is in line with a guideline from the German Rectors' Conference. The diploma supplement is part of the portfolio of the European education pass, the Europass. The Europass Certificate Supplements are available in the Europass for qualifications from the field of vocational training.

Cooperation agreement between university and enterprise

The cooperation agreement between university and enterprise regulates how the university and enterprise work together in jointly running the dual higher education programme. Its significance lies in the connection between study and practical phases that enable students to combine the academic studies and a practical training within a profession. In this case, the university designs the higher education programme in close cooperation with the enterprise and for the benefit of all those involved.

The contract regulates the selection of students, the university's obligations, the enterprise's obligations, the contributions/funding, the duration, the periods of notice, the confidentiality and final provisions (see Chapter 10 Contracts and cooperation agreements).

Matriculation documents

A prerequisite for matriculation at a university are the matriculation documents such as

- A qualification entitling the student to study at a higher education establishment or
- Appropriate training certificates,
- Cooperation agreement between student and enterprise,
- Documents for the preliminary and main internship (university of applied sciences 13 weeks, up to the start of the 4th semester).

It is important for us to point out that the documents listed here represent only a part of the entire documentation.

1 see de.wikipedia.org/wiki/Diploma_Supplement; Retrieved August 2017

7.2 Documents for the practical training of students within the dual system during the practical phases within enterprises

For courses integrating work experience in particular, the German Council of Science and Humanities (WR) recommends establishing quality assurance measures for the practical learning venue (*enterprise*) that "at least record the practical training contents and their connections to the academic modules (*of the university*), the type of supervision and the training and qualification of the supervisors on the practical side"[2]. The WR further proposes that the curricular design of the practice components and their learning objectives should be clearly formulated in consultation with the academic learning venue (*the university*) and "defined methods of practical knowledge transfer" be applied in order to "safeguard the level of study contents with the practical partner"[3].

The practical phases in the enterprise are aimed at training the dual-system students and are regulated by a cooperation agreement[4] between students and enterprise. Typical constituents of a dual higher education study agreement between enterprises and students are shown in Chapter 10.

The following deserve particular mention with regard to the design of the practical phases:

- The institutional and organisational interlinking and structuring of the learning venues university and enterprise.
- The training framework, training plans, the theory/practice modules, see Chapter 4 Development of a training concept the dual system of study with extended practical component.
- The contractual foundations, e.g. cooperation agreement between university and enterprise.
- The learning or internship agreement, see Chapter 10 Contracts and cooperation agreements.
- Quality assurance.

The institutional and organisational interlinking as well as the structuring of the learning venues university and enterprise

Documents relating to the institutional and organisational link are the module manual for the course and the cooperation agreement between university and enterprise.

Learning and internship agreement: Training of the students within the dual system is additionally regulated in the learning and internship agreement. It is important to point out that the curricular design of the practical components and their learning objectives should be formulated clearly and in writing in consultation with the academic learning venue (*the university*) as a matter of principle.

2 WR 2013: 32
3 WR 2013: 32
4 Cooperation agreement, training agreement, learning agreement, internship agreement are all synonymous terms

Training framework: Another recommended document is an individual training framework for individual students, which describes the contents of the practical training and their connections to the academic modules (*of the university*).

Theory-practice modules should be developed on the basis of the module manual in a simplified procedure and in cooperation with the university. They simultaneously serve as quality assurance for the practical training of the dual-system students within the enterprise and should be subject to the provision of mandatory proof in the process of accreditation/certification.

Irrespective of the documents for the training of the students within the dual system, documents such as the following should also be mentioned:

- Assessment procedure, test for the dual higher education course in engineering sciences or economics, e.g. business administration
- Training framework,
  - Training plan: Recommendation for the induction phase of dual-system students, communication of the basic principles,
  - Training plan: Theory/practice modules for the respective practical phases in semesters 1 to 7,
  - Training plan: Project management – independent engineering work on the basis of a contract description,
- Deployment planning for the dual-system students – departmental overview – students
- Assessment sheet for students in the dual system – final interview in the department,
- Record of training and qualification, record of activity – maintained by the dual-system students and signed off by the departmental head / authorised training representative and course manager from the university,
- Reflections recorded by the students on the practical training measures,
- Training dialogue between trainers and students on the progress and promotion of key qualifications,
- Minutes of the training dialogue,
- Guidelines for assessing the project reports, course assignments, Bachelor thesis,
- Guidelines for the interim interview,
- Guidelines for the final interview.

see chapter 5.2

7.3 Workshop description

Documentation for the dual system of study, basis for accreditation/certification

Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective.

Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome.

The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of this workshop is to provide a survey of the documentation necessary for a dual higher education programme. A distinction has to be made between fundamental documents such as course curriculum, module manual for the course, examination, study and internship regulations, etc. but also and in particular the document structure within the enterprises.

Sample procedure for a workshop:
Working in small groups, discuss the document "7 Documents for the dual system of study".

- Within the group, discuss and decide which documents are necessary for the selection procedure and matriculation at a university.
- Write down the documents on a yellow card. Place these cards on the pinboard.
- Within the group, discuss and decide which documents are necessary for the training process of dual-system students within the enterprises.
- Write down the documents on a yellow card. Place these cards on the pinboard.
- Jointly conduct a concluding discussion on the contents and the necessary document. structure for the university and the enterprises.

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as a text and photos.

Working resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantityn.

Figure 1 to 11 – Chapter 7

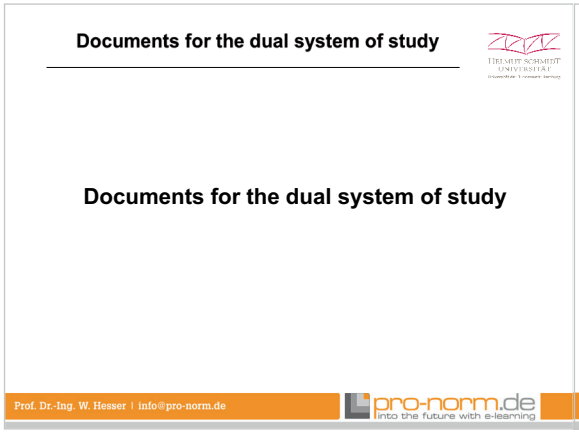


Fig. 1

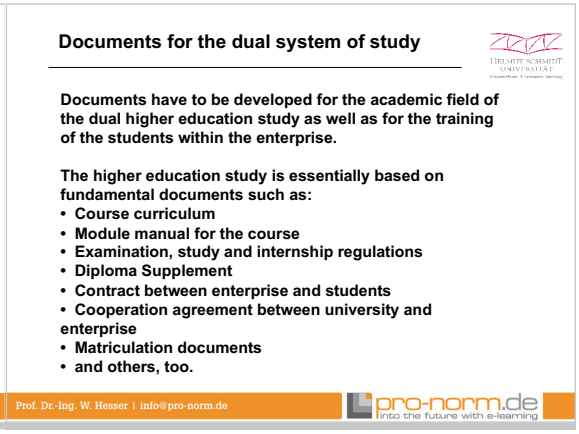


Fig. 2

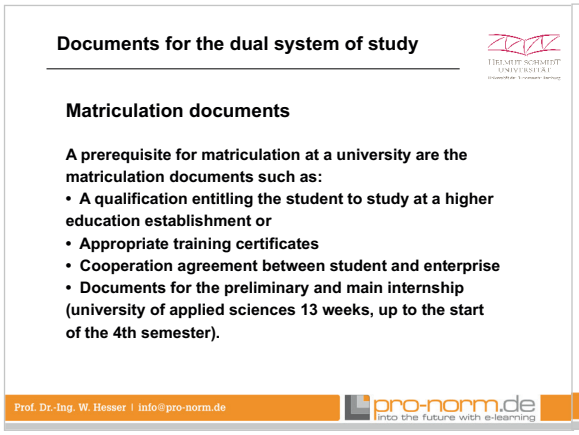


Fig. 3

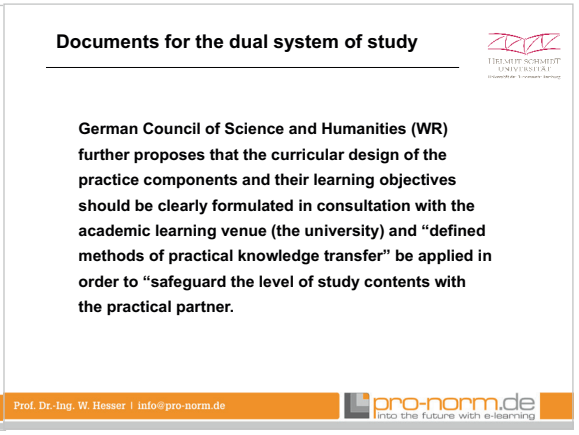


Fig. 4

Fig. 5

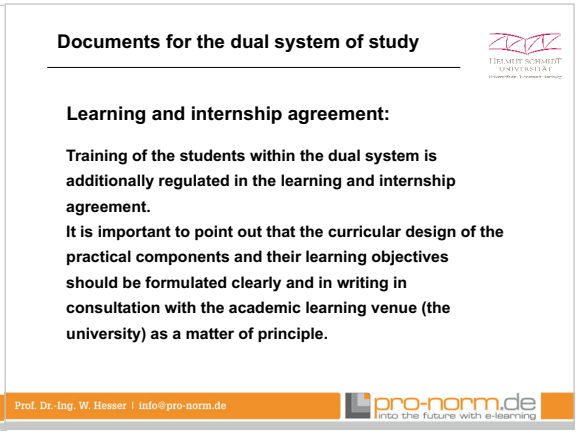


Fig. 6

Documents for the dual system of study

Training framework:

Another recommended document is an individual training framework for individual students, which describes the contents of the practical training and their connections to the academic modules (of the university).
Theory-practice modules should be developed on the basis of the module manual (of the university) in a simplified procedure and in cooperation with the university

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Fig. 7

Documents for the dual system of study

Documents such as the following should be mentioned:

- Assessment procedure, test for the dual higher education course in engineering sciences or economics, e.g. business administration
- Training framework
  - Training plan: Recommendation for the induction phase of dual-system students, communication of the basic principles
  - Training plan: Theory/practice modules for the respective practical phases in semesters 1 to 7
  - Training plan: Project management – independent engineering work on the basis of a contract description

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Fig. 8

Documents for the dual system of study

- Deployment planning for the dual-system students – departmental overview – students
- Assessment sheet for students in the dual system – final interview in the department
- Record of training and qualification, record of activity – maintained by the dual-system students and signed off by the departmental head / authorised training representative and course manager from the university
- Reflections recorded by the students on the practical training measures

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Fig. 9

Documents for the dual system of study

- Training dialogue between trainers and students on the progress and promotion of key qualifications
- Minutes of the training dialogue
- Guidelines for assessing the project reports, course assignments, Bachelor thesis
- Guidelines for the interim interview
- Guidelines for the final interview

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Fig. 10

Documents for the dual system of study

As part of the project management, all documents for a dual higher education programme were presented, corresponding to semesters 1 to 7 of the course.

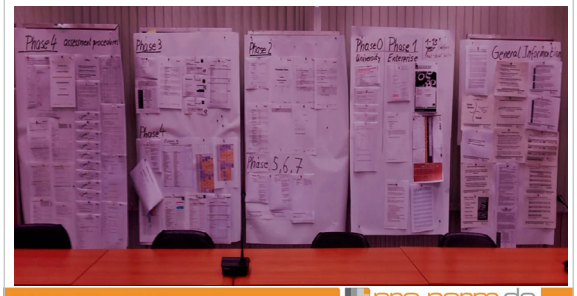

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Fig. 11

Annex: Fundamental documents

Documents for the training of students within the dual system

KMK* Guidelines, Accreditation Board, Federal Institute for Vocational Education and Training (BIBB) and enterprises

- Requirements for admission to the university, matriculation
- The procedure for selecting the dual-mode students from the participating partners (enterprises) is contractually regulated and documented
- Description of an integral course concept
- Description of the overall workload for a specific target group
- Description of the organisational coordination of the theory/practice phase
- Curriculum – divided over two learning venues
- Module manual for the course
- European credit system for the practical phase – explanation of the ECTS-capability
- Training plan
- Description of a specific training profile
- Definition of the training objectives
- Description of measures across learning venues for quality assurance including concept for quality assurance and development
- Description of a supervision concept in which supervisors are clearly defined both for the university and for the enterprise
- Cooperation agreement between university and enterprise
- Learning agreement between enterprise and student
- The practical phases are documented in a suitable form
- Assessment procedure for seminar paper, project work and Bachelor thesis
- Guidelines for the training dialogue, interim and final interview
- The university and the dual higher education course regular undergo an accreditation procedure

*KMK: Standing Conference of the Ministers of Education and Cultural Affairs of the Länder

8 Quality standards for dual higher education

8.1 General quality standards in teaching and vocational training

This chapter refers to

- Empfehlungen des Wissenschaftsrats (WR) zur Qualitätsverbesserung von Lehre und Studium 2008 [Recommendations by the German Council of Science and Humanities on improving the quality of teaching and studies 2008],
- Handreichung der AG "Studiengänge mit besonderem Profilanspruch" (Beschluss des Akkreditierungsrates[1] vom 10.12. 2010) [Guidance from the working group on "courses with special profile requirements" (decision by the Accreditation Council of 10 December 2010)],
- Recommendations by the German Council of Science and Humanities (WR) on the development of dual higher education study – policy paper 2013,
- Recommendations of the Board of the Federal Institute for Vocational Education and Training (BIBB) on dual higher education: Beschluss des BIBB-Hauptausschusses vom 14. Dezember 2016 in Bonn, Positionspapier der BIBB-Hauptausschuss AG zum dualen Studium, Beschluss des BIBB-Hauptausschusses vom 21. Juni 2017 in Bonn [Resolution by the Board of the BIBB on 14 December 2016 in Bonn, policy document of the BIBB Board working group on dual higher education, resolution by the BIBB Board on 21 June 2017 in Bonn].

By providing a list of specific quality dimensions for cooperating higher education institutions, enterprises, students and other practical partners, these documents aspire to give guidance on how existing and/or yet to be established dual higher education programmes can improve still further in quality.

After examining all documents, we see our task as being to summarise the "quality standards in teaching for dual higher education" that are described in the above-mentioned documents. In doing so, we concentrate on the document "Resolution by the BIBB Board on 21 June 2017 in Bonn".

The German Council of Science and Humanities (2008)[2] is convinced that improvements in the field of study and teaching are urgently required at German higher education institutions because the quality of these institutions has a decisive influence on competitiveness within the German academic system and there-

1 The Accreditation Council is the main decision-making body of the Foundation for the Accreditation of Study Programmes in Germany.. It decides on the accreditation and reaccreditation of accreditation agencies, specifies the quality requirements for the accreditation of courses, internal quality assurance systems at higher education institutions and agencies and also monitors the accreditations awarded by these agencies. Members of the Accreditation Council are: representatives of higher education institutions, representatives of the ministries of the German länder, representatives from professional work, international representatives and representatives of the agencies

2 Wissenschaftsrat; Empfehlungen zur Qualitätsverbesserung von Lehre und Studium. Drs. 8639-08. Berlin, 04.07.2008 [WR; Recommendations on improving the quality of teaching and studies]

fore on the future of German society. The Bologna Process[3] and the associated education reform were essentially introduced in Germany with the aim of systematically improving the programmes of studies available in the country. In addition to the structures and the organisation of study as well as the teaching and learning concepts applied – and, in the case of dual higher education, the cooperation between learning venues as well – supervision of the students at the educational establishments represents a key aspect of the quality of study.[4]

The German Council of Science and Humanities assumes that the practising of scientific thought and work forms an indispensable principle of any form of study and must also be considered a constitutive quality factor in a vocationally oriented course of study. Consequently, the quality of teaching must always be considered against the backdrop of the subject contents to be conveyed. The principle of scientific rigour distinguishes higher education study from other routes of training and education. Above all, however, its application ensures that the skill of reflection and the ability to judge are communicated along with a sound knowledge of subject matter and methodology and that students are prepared to enter professions and fields of activity characterised by openness of design and a broad spectrum of tasks and therefore demand independence and responsibility based on theoretical and methodological expertise in defining and solving problems.[5]

8.2 Resolution by the Board of the Federal Institute for Vocational Education and Training (BIBB) on 21 June 2017 in Bonn

In its document dating from 21 June 2017, the BIBB Board summarises the quality dimensions for dual courses of higher education by players involved. They are reproduced here in original form:[6]

Overview of the quality dimensions for dual courses of higher education by player

Practical partners

The relationship of cooperation between the learning venues shall be arranged in a reliable manner. The practical partners shall be involved in committees and advisory boards at the higher education institution that are relevant to dual higher education study. The persons responsible and supervisors for dual higher education study within the enterprise shall be clearly named and shall take part in regular exchanges with the responsible supervisors at the higher education

3 Wikipedia: The Bologna process refers to a transnational reform in higher education aimed at harmonising courses of study and qualifications across Europe and facilitating the international mobility of students, with a view to creating a uniform European Higher Education Area. The term originates from a policy declaration signed by education ministers from 29 European countries in the Italian city of Bologna in 1999. Retrieved August 2017

4 WR 2013: 8

5 WR 2013: 20

6 Resolution by the BIBB Board on 21 June 2017 in Bonn, page 12

institution. It shall be ensured that appropriate personnel, technical and material resources are present at the learning venue of the enterprise/with the practical partner. Supervision and advice in the subject matter for the students in the dual system shall be ensured at all learning venues. The supervisors in the enterprise shall be clearly identified and shall have the necessary subject-related and pedagogical competencies. Cooperation between venues inside and outside the higher education institution shall be based on the agreed course concepts. The theory and practice phases at the learning venues involved shall be connected with each other through the curriculum, which means that they shall be related to each other in terms of content and coordinated in terms of time scheduling. These and the respective learning objectives shall also be clear from the module descriptions (*of the higher education institution*). All constituents of the study programme shall be allocated credit points (ECTS).

The practice phases shall be documented in a suitable form. In the dual courses of study, course concept and curriculum shall serve as the basis for the planning of studies and student deployment within the enterprise. In the case of dual courses integrating an apprenticeship, an outline of timing and content or a company training plan shall be available[7]. The methodical approach and completeness of the training contents shall be guaranteed in courses of study integrating an apprenticeship. The academic feasibility shall be assured.

An agreement shall exist between the practical partner and the student within the dual system, with the nature of the agreement being independent of the respective form of study. In the contract between practical partner and student, the following aspects shall be regulated as a minimum: rights and obligations of the partners involved, remuneration, provision of the required training resources, regulations on release from employment, leave entitlement, working time, duration of contract, confidentiality clause, probationary period, termination of agreement, obligation to provide testimonial, regulation on any payment of tuition fees. The practical partners shall maintain samples of all contractual relationships.

The practical partners shall support the regular accreditation. A coordinated quality assurance and quality development concept applicable across learning venues shall be present for the dual higher education course and shall be equipped with the required tools. The breadth of subject matter within the training programme shall be assured and shall not be directed towards preparation for a specific occupation but towards possible fields of activity. Apart from the progress made in learning, the supervisory situation at the enterprise learning venue shall also undergo regular evaluation.[8]

Higher education institution

The relationship of cooperation between the learning venues shall be reliably arranged. The practical partners shall be able to take part in the committees and advisory boards at the higher education institution that are relevant to dual higher education study. The persons responsible and supervisors for dual higher educa-

7 If an apprenticeship that comes under the Vocational Training Act (BBiG) or the Crafts and Trades Regulation Code (HwO) is integrated, the company training course plan in accordance with Sections 11 and 14 of the BBiG and the recommendations on the organisation of content and timing shall be a constituent part of every apprenticeship contract

8 Resolution by the BIBB Board on 21 June 2017 in Bonn, pages 12–18

tion study within the higher education institution shall be clearly named and shall take part in regular exchanges with the responsible supervisors at the enterprise. It shall be ensured that appropriate personnel, technical and material resources are present at the learning venue of higher education institution. Supervision and advice in the subject matter for the students in the dual system shall be ensured at all learning venues. The supervisors in the higher education institution shall be clearly identified and shall have the necessary subject-related and pedagogical competencies. Cooperation between venues inside and outside the higher education institution shall be based on the agreed course concepts. The theory and practice phases at the learning venues involved shall be connected with each other through the curriculum, which means that they shall be related to each other in terms of content and coordinated in terms of time scheduling. These and the respective learning objectives shall also be clear from the module descriptions (of the higher education institution). All constituents of the study programme shall be allocated credit points (ECTS). The academic feasibility shall be assured.

The rights and obligations of the partners involved shall be contractually agreed, generally in a cooperation agreement. The cooperation agreement makes binding statements on the following aspects, among others, of the collaboration: rights and obligations of the participating partners, number of students to be expected as well as the participation in university committees and conditions and modalities of terminating the agreement. The higher education institution shall be responsible for the design and organisation of the course and carry this out as agreed. The procedures for selecting the students within the dual system shall be agreed among the cooperation partners – as shall the selection criteria on which they are based. The players involved shall maintain samples of all contractual relationships.

The higher education institutions involved and the respective dual higher education courses shall regularly undergo procedures to obtain the Accreditation Council seal. A coordinated quality assurance and quality development concept applicable across learning venues shall be present for the dual higher education course and shall be equipped with the required tools. The breadth of subject matter within the training programme shall be safeguarded and shall not be directed towards preparation for a specific occupation but towards possible fields of activity. Regular evaluations of learning progress shall take place.[9]

Students

Students shall be involved in the committees and advisory boards at the higher education institution that are relevant to dual higher education study. The students shall provide feedback on the academic feasibility and the methodical approach and completeness of the training contents in courses of study integrating an apprenticeship. An agreement shall exist between the practical partner and the student within the dual system, with the form of the agreement being independent of the respective form of study. In the contract between practical partner and student, the following aspects shall be regulated as a minimum: rights and obligations of the partners involved, remuneration, provision of the required training resources, regulations on release from employment, leave entitlement,

9 Ibid.

working time, duration of contract, confidentiality clause, probationary period, termination of agreement, obligation to provide testimonial, regulation on any payment of tuition fees. Learning progress and supervisory situation shall be constituents of the evaluation.[10]

Additional partners (e.g. vocational school, *chamber of industry and commerce, chamber of handicrafts, trade unions*)

The relationship of cooperation between the learning venues shall be reliably arranged. If additional partners are involved apart from the practical partners and higher education institution (e.g. vocational school, chamber of industry and commerce, chamber of handicrafts, trade unions), they should also be involved with the coordination task in the committees and advisory boards at the higher education institution that are relevant to dual higher education study. It shall be ensured that the additional partner has appropriate personnel, technical and material resources. Supervision and advice in the subject matter for the students in the dual system shall be ensured at all learning venues. The supervisors at the "additional learning venue" shall be clearly identified and shall have the necessary subject-related and pedagogical competencies. The theory and practice phases at the learning venues involved shall be connected with each other through the curriculum, which means that they shall be related to each other in terms of content and coordinated in terms of time scheduling. These and the respective learning objectives shall also be clear from the module descriptions. The methodical approach and completeness of the training contents shall be guaranteed in courses of study integrating an apprenticeship. All constituent parts of the study programme shall be allocated credit points (ECTS). The academic feasibility shall be assured. The rights and obligations of the partners involved shall be contractually agreed, generally in a cooperation agreement. A coordinated quality assurance and quality development concept applicable across learning venues shall be present for the dual higher education course and shall be equipped with any required tools. The breadth of subject matter within the training programme shall be assured and shall not be directed towards preparation for a specific occupation but towards possible fields of activity.[11]

The BIBB Board[12] reports that there are no legislatures at national or federal state level that are decisively involved in the development of uniform regulatory instruments.[13]

"Dual higher education courses are generally part of higher education and are thus subject to university autonomy and the academic requirements of a higher education course. The nature of the organisational, subject-related, curricular and contractual connection of the learning venues is a matter of the course design, which is confirmed through accreditation."

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10 Ibid.

11 Resolution by the BIBB Board on 21 June 2017 in Bonn, pages 12–18

12 Wikipedia: The Board is an organ of the Federal Institute for Vocational Education and Training (BIBB) and at the same time a statutory consultative body of the federal government in fundamental issues of vocational education. Involved in the Board with an equal proportion of votes are representatives of employers and trades unions, the federal state and the Federal Government.

13 Resolution by the BIBB Board on 21 June 2017 in Bonn, page 2

"In the academic context there are no overarching concepts of in-company learning, instead they are designed individually from university to university and from course to course and depend to a great extent on the specific needs of the cooperating practical partner."[14]

"The respective proportions of the study phases at the learning venues of higher education institution and enterprise (as well as those of the theory-based and practice-based course sections independent of learning venue) are also not subject to any general regulation.[15]

The same applies to the ECTS credit points assigned to the enterprise-based phases. In this area, too, no formal regulations exist.

The potentials ascribed to dual higher education add up to a very overinflated expectation so that dual higher education is seen as a polyvalent concept with regard to a variety of challenges. Apart from thoroughly pleasing assessments of dual higher education study by students, the results of the survey by Hesser, W.; Langfeldt, B.[16] also identify potential for improvement, including aspects of organisation and supervision at both the higher education institutions and in the enterprises. In particular, some deficits appear to exist in the coordination and exchange of information between the two learning venues. Another area in need of optimisation is that of the practice phases. Consequently, the work situation of the students is characterised by a strongly individual communication of knowledge in the departments of the enterprise, which may have a negative effect on the skill profile and subsequent employability of the students concerned.

In order to raise the status of higher education teaching and underline its importance for the future development of Europe as an academic location, it is essential to develop excellent teaching at higher education institutions.

What is sought here are strategic learning concepts in which the higher education institutions recognise their objectives for study and teaching on the basis of the way they perceive themselves. It is necessary to explain how the attractiveness of the training venue – particularly for special courses, such as dual courses of higher education – can be substantially increased.

This approach promotes an improvement in teaching in the field of dual higher education study for the Bachelor courses, with the aim of achieving intelligently designed curricula and a good balance between the teaching of basic, specialist and practical competencies.

The aim should be to advance a discussion on subject-related specialisations in the field of dual higher education courses in which examples of good teaching are presented, experience is exchanged and important aspects in the evolution of didactic interlinking of the learning venues of higher education institution and enterprise are devised on the basic idea of an "integrated overall curriculum" as part of the Bologna process.

14 Ibid., page 3
15 Ibid., pages 5, 6, 8
16 Hesser, W.; Langfeldt, B.

8.3 Workshop description

Quality standards for dual higher education

Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective.

Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome.

The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of the workshop is to communicate the diversity of the term quality to participants. Quality of dual higher education does not only refer to the quality of teaching at the university but also to the quality of training within the enterprise. Coordination of the curricula to form an integrated overall curriculum is of special importance. Quality may, however, also refer to the supervision of students in the dual system as well as to the information and communication structures between higher education institution and enterprise.

Workshop schedule**:**

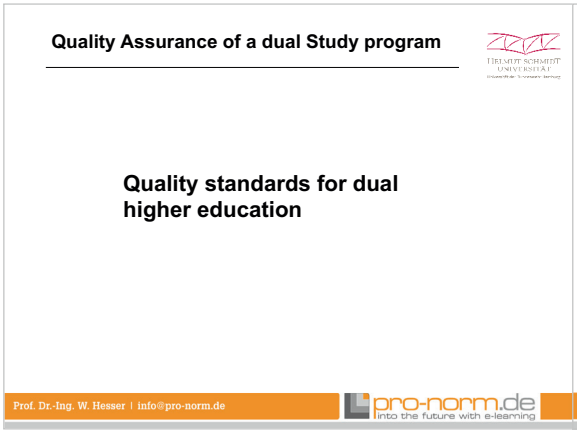
- In your respective group, discuss the term quality in Section 8.1 with regard to dual higher education.
- Quality refers to certain areas or contents. Name these quality terms and write them on a yellow card. Place these cards on the pinboard.
- Discuss the individual contents of the cards, sort the cards into groups and give the groups a heading.
- The contents in Section 8.1 differ according to practical partner, higher education institution, students, etc. Discuss the differences in content and write them on a yellow card.
- Discuss the individual contents of the cards, sort the cards into groups and give the groups a heading.

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as a text and photos

Working resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantity.

Figure 1 to 18 – Chapter 8



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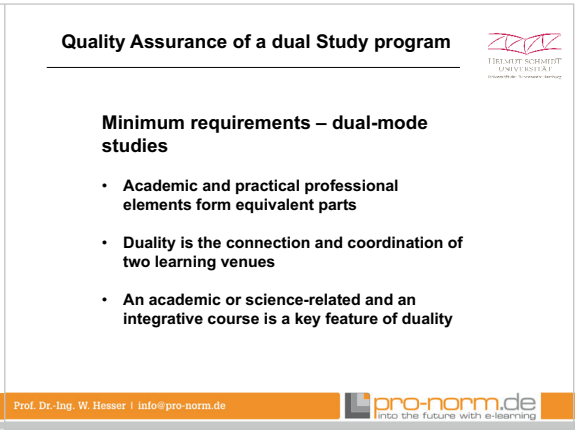

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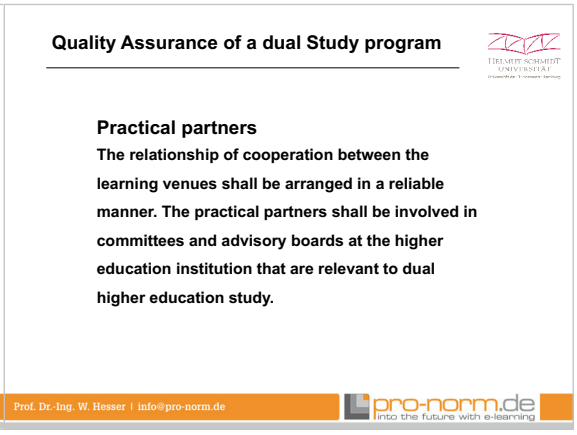

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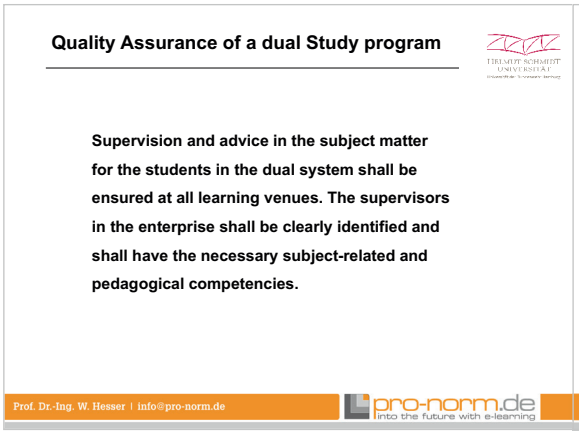

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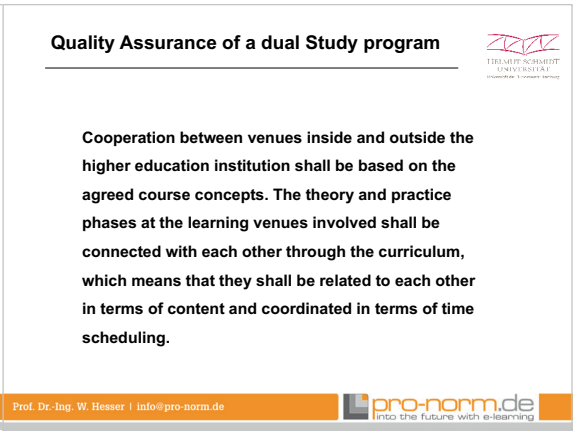

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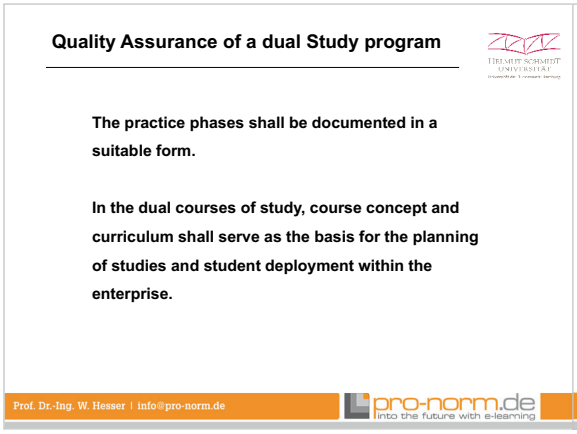
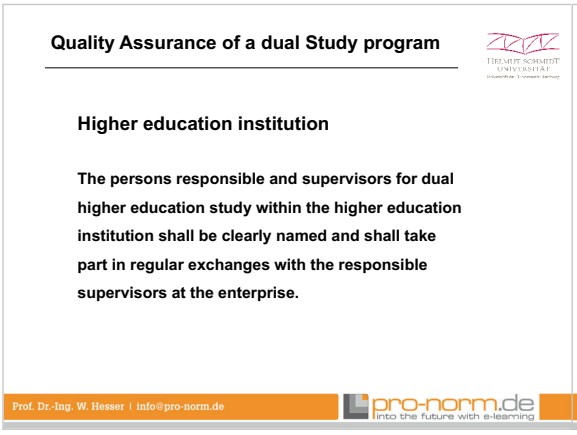


Fig. 7

Fig. 8



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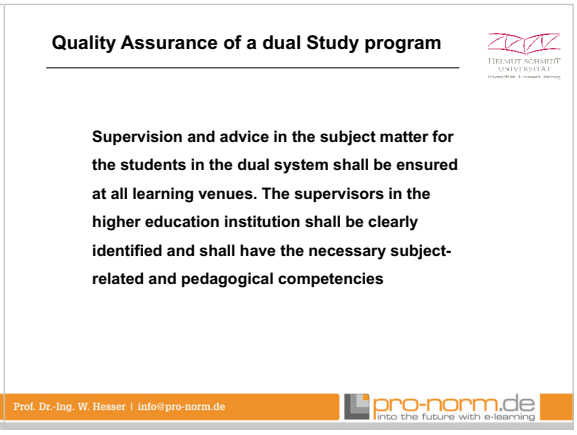

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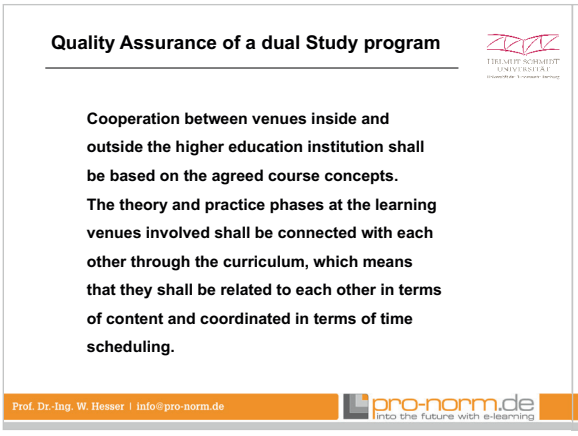

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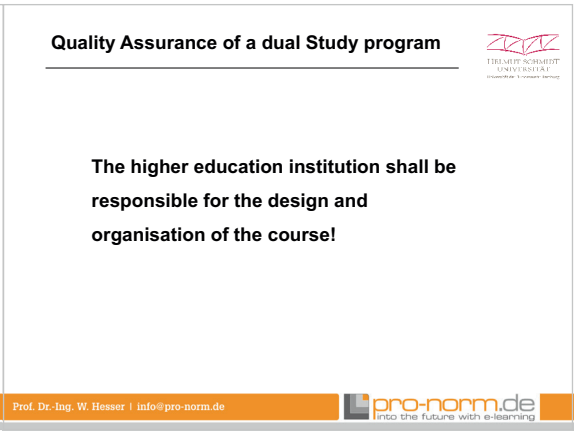

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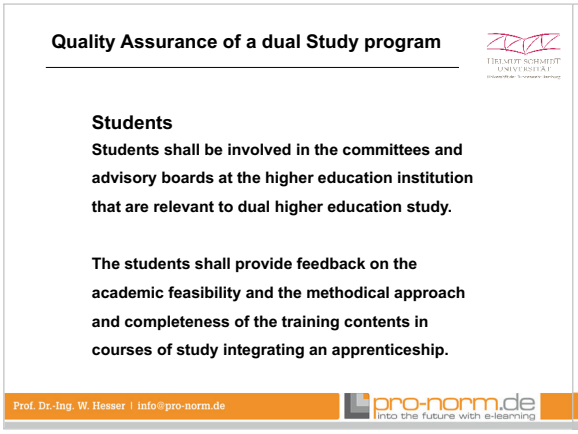

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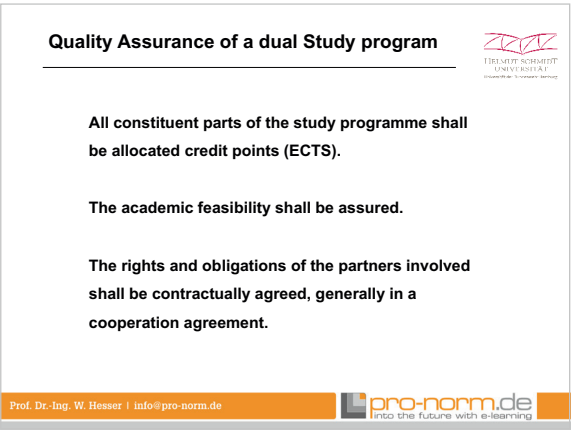

Fig. 14

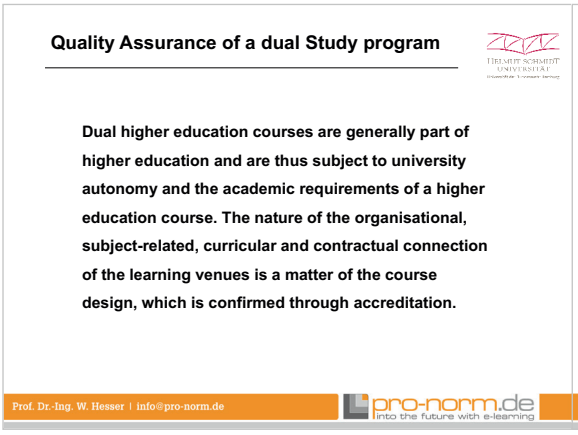

Fig. 15

Fig. 16

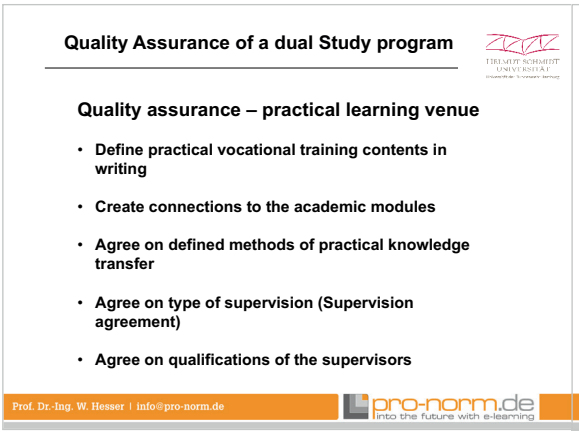

Fig. 17

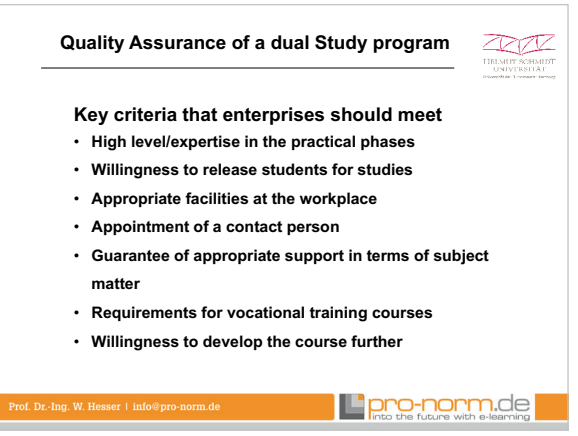

Fig. 18

9 Selection procedure

9.1 Selection procedure for students in the dual higher education system

Due to the fact that the dual system of study is experiencing growing demand among school leavers, enterprises[1] are finding themselves in the privileged position of being able to pick "the cream of the crop".[2] For this purpose, they are utilising a wide range of selection procedures while attaching value to multiple criteria. "In addition to the professional interests and personality characteristics, performance expectations also play a key role."[3] In four out of five enterprises in the preliminary study for our survey[4] an assessment procedure was carried out while structured interviews were conducted in one out of five enterprises instead. In addition to cognitive achievements, the selection criteria also included factors such as social competence, teamworking skills and staying power. On average, only approx. 20% of applicants received an invitation to the assessment centre on the basis of their application documents and only between 3% and 7.5% of up to 1,400 applicants received a training place within an enterprise.

The German Council of Science and Humanities (WR) confirms that students in the dual system are especially ambitious, which may be related to the highly discerning selection procedures conducted by the practical partners.[5] These selection procedures primarily include the afore-mentioned assessment centres, which record existing competencies, but are also intended to enable a forecast of career potential and future professional development.[6]Various techniques are applied in such a selection procedure, which can usually be roughly subdivided into tools for diagnosing aptitude and tasks relevant to performance and activity. According to the relevant academic literature[7], the cost-intensive and time-consuming assessment centres are an advisable procedure whereas smaller enterprises should conduct a cost-benefit analysis to examine whether such an investment is worthwhile.

The result from this selection process and from the expectations of the students within the dual system with regard to their professional careers partially contradicts the human resources strategy of the enterprises.

After completing their studies, dual-system students expect a career path in the medium term that leads towards a management function, but the human re-

1 Hesser, W.; Langfeldt, B.
2 Krone, Sirikit: Neue Karrierepfade in den Betrieben: Nachwuchsbindung oder Akademisierung? [New career paths in enterprises: Inspiring loyalty among recruits or academisation?] In: Krone Sirikit (Ed.): Dual Studieren im Blick. [Focus on students in the dual system.] VS Verlag, p. 51–88
3 Wolter 2016: 48
4 Hesser, W.; Langfeldt, B.
5 German Council of Science and Humanities (WR) 2013: 14
6 Fisseni & Preusser 2007. Assessment-Center. Eine Einführung in Theorie und Praxis. [Assessment centres. An introduction to theory and practice.] Göttingen: Hogrefe Verlag
7 Bartell 2016: Qualitätssicherung im Assessment-Center. Wissenschaftliche Betrachtung in Theorie und Praxis. [Quality assurance in the assessment centre. An academic consideration in theory and practice.] Wiesbaden: Springer Gabler

sources strategy of the enterprises is often geared towards deploying dual-system students in operational positions at middle management levels.

The discrepancy between the students' expectations and the human resources strategy of the enterprises leads to conflicts, with the result being that roughly 30% of graduates from dual courses of higher education do not remain within the enterprise over the medium term.[8]

9.2 Selection procedure for enterprises

For courses integrating work experience in particular, the WR recommends establishing quality assurance measures for the practical learning venue of the enterprise that "at least record the practical training contents and their connections to the academic modules (module manual of the university), the type of supervision and the training and qualification of the supervisors in the practical side".[9]

Today, students in the dual system work and learn without any entitlement to a recognised training concept, which is why the competencies of the dual-system students are essentially determined by the quality of the learning processes within the departments of the enterprises. The curricular design of the practical components as a quality attribute in dual higher education is at the focus of future accreditation procedures.

Where enterprises are involved in the admission and selection of students in dual higher education courses, this should be documented in a suitable way and clearly explained in the accreditation.[10]

The websites of various universities display the general conditions for partner enterprises within dual higher education. We have investigated and summarised the key requirements:

1. The enterprise shall determine its human resources' demand and derive from this its need for academic training for the next five years.
2. The enterprise shall allow the university to examine its suitability for offering dual higher education study.
3. The enterprise shall create suitable organisation, information and communication structures for the education and supervision of the students within the dual system.
4. The enterprise shall develop a documentation system which provides proof that the training procedure and the training contents for the dual-system students have been recorded. The documentation system shall be part of the information and communication structures and a basis for the accreditation process.

8 Meyer-Guckel et al. 2015: Das duale Studium: Daten und Diskussionen. Qualitätsentwicklung im dualen Studium. [The dual system of higher education: data and discussions. The development of quality in the dual system of higher education.] Stifterverband – Verwaltungsgesellschaft für Wissenschaftspflege mbH

9 WR 2013: p. 32

10 WR 2013: p. 7

5. The enterprise shall assume responsibility for communicating the practical course contents covered by theory/practice modules within the specified training period.
6. A person/mentor within the enterprise, who has sufficient technical and didactic expertise, shall assist the students and be responsible for communication and feedback between enterprise and university.
7. A suitable person with sufficient technical knowledge, professional experience and educational training shall design an education/training plan in which details of the training in the different departments of the enterprise are apparent and can be implemented in theory/practice modules in accordance with the module manual.
8. Depending on the specific study model, the enterprise shall release the students from their activities within the enterprise during the time when lectures are taking place for substantial periods or on certain days as well as for examinations.
9. The enterprise shall pay any tuition fees that are due (particularly in the case of private establishments).
10. The enterprise shall pay a training remuneration as a means of subsistence.

To summarise, it may be observed that the linking of theory and practice in the enterprises is recognised as a distinctive characteristic of dual higher education courses and at the same time represents their greatest challenge. In future, minimum standards relating to training contents, documentation and compulsory records for the students within the dual system are set to become part of an accreditation process.

9.3 Evaluation form for enterprises

One prerequisite for a company within the dual higher education system is to ensure a high level of practical training, which, in terms of its subject matter, is directed towards the subsequent professional activity of the dual-system students. It is necessary to guarantee minimum requirements with respect to infrastructure, trainers and mentors.

Name of enterprise:

Sector: Annual turnover:

Contact person:

Number of employees:

Organisational structure: Names of individual departments

Human Resources: Planning of human resources' demand

Finance/Accounting

Marketing

Sales

Purchasing

Development and design

- Calculation department
- Engineering design department
- Contracts department
-

Production

- Fabrication
- Operations scheduling
- Assembly
- Materials management

Training

- Commercial training
- Technical training

Requirements on training within the enterprise

- High level/expertise of the trainers
- Appropriate facilities at the workplace
- Guarantee of a qualified mentor/contact person
- Guarantee of suitable technical supervision within the departments
- Willingness to release students for studies
- Willingness to develop the dual higher education course further

Remuneration of the dual students in the dual system

Payment of the tuition fees

Training/internship/study contract

Prepare a company training plan geared to the course contents

Willingness to take on trainees in permanent employment after successful graduation

Willingness to exchange experience with firms cooperating in the dual higher education programme

9.4 Workshop description

Selection procedures for students in the dual higher education system and enterprises

Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective.

Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome.

The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of this workshop is to discuss selection procedures for students in the dual system and selection procedures for enterprises.

- Discuss the contents of the document "Selection procedures for students in the dual system and selection procedures for enterprises".
- Name the key selection procedures for students and write them on a yellow card. Place these cards on the pinboard.
- Within your group, decide on a selection procedure and describe this in 15 lines.
- Working together as a group, discuss the essential criteria for selecting an enterprise and write this on a yellow card. Place these cards on the pinboard.
- Within your group, decide which are the essential criteria for selecting an enterprise and describe them in 15 lines.

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as a text and photos

Working resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantity.

Figure 1 to 11 – Chapter 9

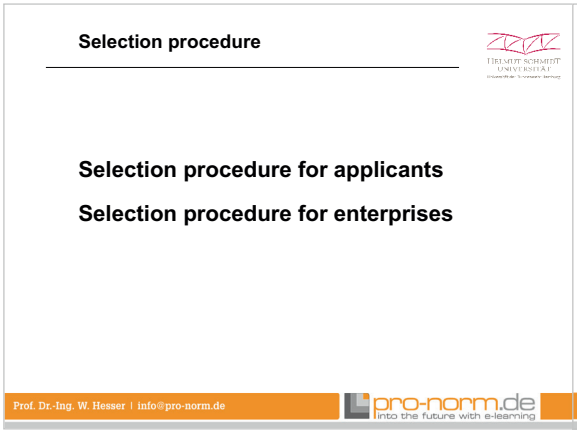

Fig. 1

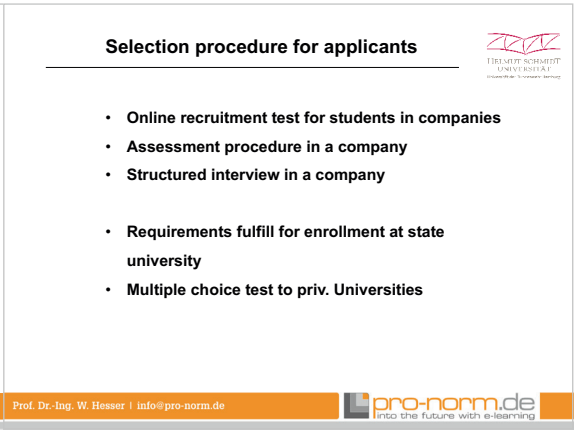

Fig. 2

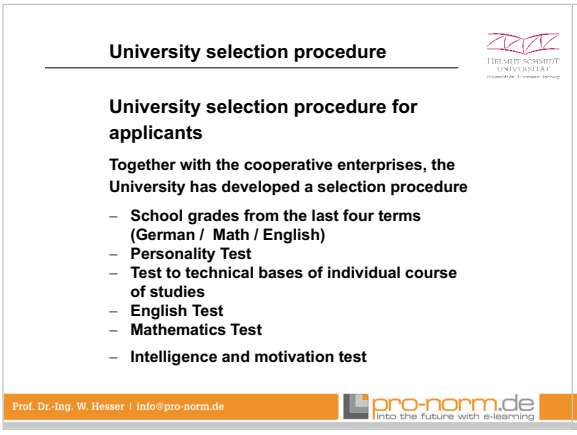

Fig. 3

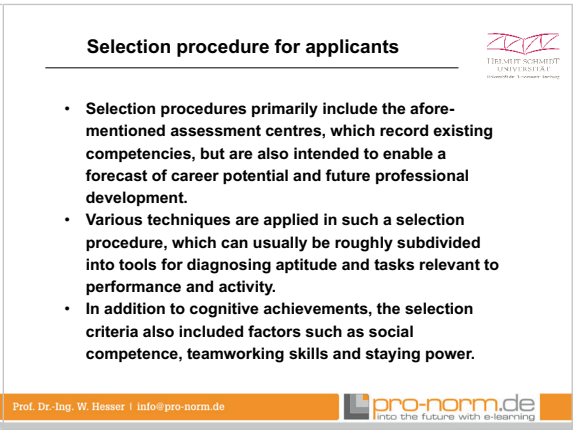

Fig. 4

Fig. 5

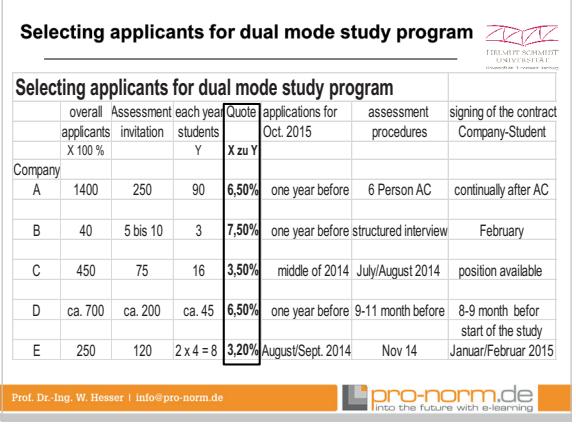

Fig. 6

Application process for the study

Application process > Course with extended practice >< 1 year

7 Start of the dual study	Application process ≤ 1 year	October
6 Enrollment at University		September
5 Admission to the university		August/September
4 Preliminary internship in the company		July/August/September
3 application period for the university		April/May/June
2 Signing> Contract> Company		November/December/January
1 application period for enterprises		August/September/October

Fig. 7

Selection procedure for enterprises

General conditions for partner enterprises within dual higher education. We have investigated and summarised the key requirements:

1 The enterprise shall determine its human resources demand and derive from this its need for academic training for the next five years.
2 The enterprise shall allow the university to examine its suitability for offering dual higher education study.
3 The enterprise shall create suitable organisation, information and communication structures for the education and supervision of the students within the dual system.

Fig. 8

Selection procedure for enterprises

4 The enterprise shall develop a documentation system which provides proof that the training procedure and the training contents for the dual-system students have been recorded. The documentation system shall be part of the information and communication structures and a basis for the accreditation process.
5 The enterprise shall assume responsibility for communicating the practical course contents covered by theory/practice modules within the specified training period.
6 A person/mentor within the enterprise, who has sufficient technical and didactic expertise, shall assist the students and be responsible for communication and feedback between enterprise and university.

Fig. 9

Selection procedure for enterprises

7 A suitable person with sufficient technical knowledge, professional experience and educational training shall design an education/training plan in which details of the training in the different departments of the enterprise are apparent and can be implemented in theory/practice modules in accordance with the module manual.
8 Depending on the specific study model, the enterprise shall release the students from their activities within the enterprise during the time when lectures are taking place for substantial periods or on certain days as well as for examinations.
9 The enterprise shall pay any tuition fees that are due (particularly in the case of private establishments).
10 The enterprise shall pay a training remuneration as a means of subsistence.

Fig. 10

Selection procedure

The discrepancy between the students' expectations and the human resources strategy of the enterprises leads to conflicts, with the result being that roughly 30% of graduates from dual courses of higher education do not remain within the enterprise over the medium term.

Fig. 11

Annex: Test for dual higher education study Engineering Science

Areas tested

- General knowledge, business
- Basic knowledge of physics
- Understanding of figures and tables
- Understanding of mathematics/logic
- Spatial perception
- Language proficiency in English
- Language proficiency in German

Time allowed: 120 minutes

Permitted aids: pocket calculator

Overview of the respective test scales:

Test scale	Composition of the scale	Number of tasks
General knowledge / business	Economics Politics	5 tasks
Basic physics		6 tasks
Understanding of figures and tables	Geometry Basic arithmetic Rule of Three (cross-multiplication) Calculating percentages	9 tasks
Understanding of mathematics/logic	Exponents Fractions Roots Logarithms Laws of mathematics	10 tasks
Spatial perception		5 tasks
Language proficiency in English	Text comprehension Grammar Vocabulary	3 tasks
Language proficiency in German	Text comprehension Spelling Grammar Vocabulary	5 tasks

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10 Contracts and cooperation agreements

The aim of this chapter is to provide information on the design of contracts between university and enterprises as well as between enterprises and students as illustrated in the following public documents.
We refer here to the following documents:

- Handreichung der AG „Studiengänge mit besonderem Profilanspruch“ (Beschluss des Akkreditierungsrates vom 10.12. 2010) [Guidance from the working group on “courses with special profile requirements“ (decision by the Accreditation Council of 10 December 2010)],
- Recommendations of the German Council of Science and Humanities (WR) on the development of dual higher education study – policy document 2013, and
- Recommendations of the Board of the Federal Institute for Vocational Education and Training (BIBB) on dual higher education, resolution by the Board of the BIBB on 14 December 2016 in Bonn, policy document of the BIBB Board working group on dual higher education, resolution by the BIBB Board on 21 June 2017 in Bonn.

10.1 Cooperation agreements between universities and enterprises

Handreichung der AG „Studiengänge mit besonderem Profilanspruch“ (Beschluss des Akkreditierungsrates vom 10.12. 2010) [Guidance from the working group on “courses with special profile requirements“ (decision by the Accreditation Council of 10 December 2010)]
The excerpts from this document are:

- Dual courses of study…with the curriculum distributed over at least two learning venues…. with their content, time and organisational aspects being consciously integrated for the purpose of achieving a specific skill profile for the students via the connection of theoretical education with practical training[1].
- The university awarding the degree bears the final academic responsibility, also in the case of such courses in which other organisations are commissioned with or involved in running parts of the course[2].
- Dual courses of higher education: The university describes the coordination of subject matter in the theory and practice phases within a self-contained course concept from which the design of the practical phases and their allocation of credits is apparent[3].

1 Accreditation Council from 10 December 2010, see page 3
2 Accreditation Council from 10 December 2010, see page 5
3 Accreditation Council from 10 December 2010, see page 6

- Dual courses of higher education: Where enterprises are involved in the admission and selection of students in dual higher education courses, this should be documented in a suitable way and clearly explained in the accreditation[4].
- Dual courses of higher education:…The university describes the organisational coordination of theory and practice phases in a self-contained course concept from which the time scheduling of the course is apparent[5].

Recommendations of the German Council of Science and Humanities (WR) on the development of dual higher education study – policy paper 2013

The excerpts from this document are:

- Relationship of the learning venues: This dimension shows the extent to which the learning venues are interconnected in terms of subject matter, time scheduling and institutional aspects. Features include joint committees of universities and practical partners, regular cooperation projects, reciprocal visits of the supervisors from university and practice partner or supervision of practical phases by lecturers and vice versa. Key points here are the level of coordination for learning materials and modules, the incorporation of the practical components into the curriculum and their recognition within ECTS. The compatibility of time scheduling and organisation aspects can also be demonstrated here[6].
- Design of the practical context: …Academic support during the practical learning phase is important for recognition of the learning achievements acquired at the practical learning venue. Further criteria may include, for example, the supervisory infrastructure on the practical side…[7]
- From the viewpoint of the German Council of Science and Humanities, all formats for dual higher education study should be based upon the quality assurance measures for the practical learning venue. They should at least record the practical training contents and their relations to the academic modules, the type of supervision and the qualification of the supervisors on the practical side[8].

Summarising the requirements of the Accreditation Council of 10 December 2010 and those of the 2013 policy paper by the German Council of Science and Humanities results in the following list of requirements for designing the contract between university and enterprise:

1. The curriculum shall be coordinated over two learning venues in terms of its content, time scheduling and organisational aspects.
2. A specific skill profile for the students shall be achieved via the connection between theoretical education and practical training.
3. The university awarding the degree shall bear the final academic responsibility for the theoretical education and practical training.

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4 Accreditation Council from 10 December 2010, see page 7
5 Accreditation Council from 10 December 2010, see page 8
6 WR: page 24
7 WR: page 24
8 WR: page 32

4. The university shall describe the coordination of contents for the theory and practical phases in a self-contained course concept.
5. The university shall describe the content design of the practical phases and their allocation of credits.
6. If enterprises take the decision on the selection of students for the dual higher education courses, the selection procedure shall be agreed with the university, documented and clearly explained in the accreditation.
7. The university shall describe the organisational coordination of theory and practice phases in a self-contained course concept from which the time scheduling of the course is apparent.
8. Statements shall be made on the joint committees of universities and practical partners.
9. Statements shall be made on regular cooperation projects.
10. Statements shall be made on reciprocal visits of supervisors from university and practical partners or the supervision of practical phases by lecturers and vice versa.
11. Statements shall be made on the joint coordination of learning contents and modules for incorporating the practical components into the curriculum and their recognition within ECTS.
12. Academic support during the practical learning phase is important for recognition of the learning achievements acquired at the practical learning venue and proof of this support is required.
13. Training measures for the practical learning venue shall be set up. The practical training contents and their connections with the academic modules on the practical side shall be recorded and proof of this shall be provided in the accreditation process.
14. The type of supervision and the qualification of the supervisors shall be recorded on the practical side and proof of this shall be provided in the accreditation process.

Policy paper of the BIBB Board working group on dual higher education, resolution by the Board of the BIBB on 21 June in Bonn.
Contractual foundations: The cooperation agreement makes binding statements on the following aspects of working together among others: rights and obligations of the participating partners, conditions and modalities of terminating the agreement, number of students to be expected and the participation in university committees. The university is responsible for the design and organisation of the course and carries this out as agreed. The procedures for selecting the students within the dual system are agreed among the cooperation partners, as are the selection criteria on which they are based[9].

To summarise, it may be stated that the cooperation agreements we have at our disposal from various universities and federal states do not comply with the requirements of the Accreditation Council from 10 December 2010 and of the German Council of Science and Humanities, policy paper 2013. Judged by the cata-

9 BIBB: page 9

logue of requirements 1 to 14, the vast majority of the agreements exhibit deficits that indicate failure by the universities.

10.2 Contractual agreement between students and enterprises

Handreichung der AG „Studiengänge mit besonderem Profilanspruch" (Beschluss des Akkreditierungsrates vom 10.12. 2010) [Guidance from the working group on "courses with special profile requirements" (decision by the Accreditation Council of 10 December 2010)]

The excerpts from this document are:

The status of the students in the event of their dropping out of the apprenticeship or the course of studies has to be regulated and recorded within the accreditation procedure. Furthermore, it is also necessary to ensure that students are also able to complete their studies if changes occur unexpectedly in the cooperation between training enterprise and university[10].

Recommendations of the German Council of Science and Humanities (WR) on the development of dual higher education study – policy paper 2013

The excerpts from this document are:

1. Services to be provided by the practical partners: This dimension primarily shows in what form and with what prospects the students are incorporated into the enterprises or establishments. This includes the type of employment relationship including the regulations on remuneration, social security contributions and the like, guarantees of continued employment or obligations on the student to remain with the enterprise after training as well as the option of completing the practical phases in different enterprises or at different locations of a company or establishment. As a secondary aspect, the services to be provided by the practical partner relating to the university can also be listed here[11].
2. Costs and finance: This dimension is intended to show whether fees are incurred by the students (in the case of private universities or further education courses) and whether and to what extent the enterprises contribute financially to the courses of study[12].
3. B.III FINANCE AND SERVICES BY THE PRACTICAL PARTNER
   The remuneration, the type of employment, any guarantees of continued employment after graduation and employer contribution such as social security and health insurance also play a key role in the choice of studies[13].

10 Accreditation Council from 10 December 2010, see page 10
11 WR: page 25
12 WR: page 25
13 WR: page 34/35/36

Policy paper of the BIBB Board working group on dual higher education, resolution by the Board of the BIBB on 21 June 2017 in Bonn.
The excerpts from this document are:

Contractual foundations: An agreement also exists between the practical partner and the student within the dual system, with the form of the agreement being independent of the respective form of study. The following aspects are regulated within this agreement as a minimum: rights and obligations of the partners involved, remuneration, provision of the required training resources, regulations on release from employment, leave entitlement, working time, duration of contract, confidentiality clause, probationary period, termination of agreement, obligation to provide testimonial, regulation on any payment of tuition fees.

Summarising the requirements of the Accreditation Council from 10 December 2010, those of the German Council of Science and Humanities – policy paper 2013 – and the policy paper of the BIBB Board working group on dual higher education produces the following list of requirements for designing the agreement between enterprises and students:

Rights and obligations of the partners involved, here enterprises

1. Remuneration of the students in the dual system,
2. Social security contributions, health insurance and the like,
3. Guarantees of continued employment after the studies,
4. Obligation on student to remain with the enterprise after training,
5. Provision of the required training resources,
6. Regulations on release for study,
7. Leave entitlement,
8. Regulations on release for semester spent abroad,
9. Regulation of working hours,
10. Duration of contract,
11. Confidentiality clause,
12. Probationary period,
13. Termination of contract, due and proper notice,
14. Obligation to provide a testimonial/reference,
15. Regulation on possible payment of tuition fees,
16. Financial participation of the enterprise in courses/university,
17. Regulation for termination of the studies.

Rights and obligations of the partners involved, in this case the students

The documents named above do not provide any statements relating to the rights and obligations of the students. This notwithstanding, the students in the dual system have contractual obligations to the enterprise. A dual higher education agreement between enterprise and student should contain the regulations listed below.

A distinction has to be made here between a course of study integrating an apprenticeship – which is subject to the training guidelines of the chamber of industry and commerce / chamber of handicrafts – and a course integrating work experience.

The student undertakes to acquire the knowledge, skills and professional experience required to achieve the course objective within the schedule standard period of study. In particular, the student gives the following undertakings:

1. Obligation to learn: The course shall be completed within the scheduled period of study. Evidence of achievements often has to be presented.
2. Course components/examinations and other measures: To regularly attend the lectures and examinations as well as other course components and examinations.
3. Compliance with instructions: Instructions of the superior or persons authorised to give instructions shall be obeyed.
4. Notification of marks: The enterprise shall be notified without delay of the marks achieved after each semester.
5. Company regulations: The operating codes (breaks, working attire, etc.) shall be observed for the respective company study location.
6. Notification: A sick note shall be submitted in the event of absence from work, see operating codes.
7. Company secrets: Secrecy shall be maintained on operating and business secrets, even after termination of the contractual relationship.
8. The enterprise and the student shall conduct talks on the progress of the studies at regular intervals.

An agreement between enterprise and students should be drawn up by the university and therefore lies within the responsibility of the university. The university authorities have the social responsibility by defining uniform minimum standards, e.g. for the remuneration of students in the dual system, contributions for social security, health insurance and the like, regulations for release from employment during the course, leave entitlement, regulations for release from employment during a semester abroad, guarantees of continued employment, bonding of student to the enterprise after graduation, etc.

The agreements shall be presented to the university authorities or their representatives after they have been concluded.

Individual agreements between enterprises and students that fall below the minimum standards shall result in the enterprise being excluded from the dual higher education programme.

10.3 Workshop description

Contracts and cooperation agreements

Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective.

Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome.

The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of this workshop is to record and discuss the rights and obligations of the universities, the enterprises and the students within a dual higher education programme. The basis for this is Chapter 10 "Contracts and cooperation agreements".

Sample procedure for a workshop:

- Discuss the contents of the document "Contracts and cooperation agreements". In the group, discuss the rights and obligations of the universities, enterprises and students.
- Working together as a group, discuss the cooperation agreement between university and enterprise. Name the rights and obligations and write them on a yellow card. Place these cards on the pinboard.
- Working together as a group, discuss the contractual agreements between enterprises and students. Name the rights and obligations and write them on a yellow card. Place these cards on the pinboard.

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as a text and photos

Working Resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantity.

Figure 1 to 17 – Chapter 10

Fig. 1

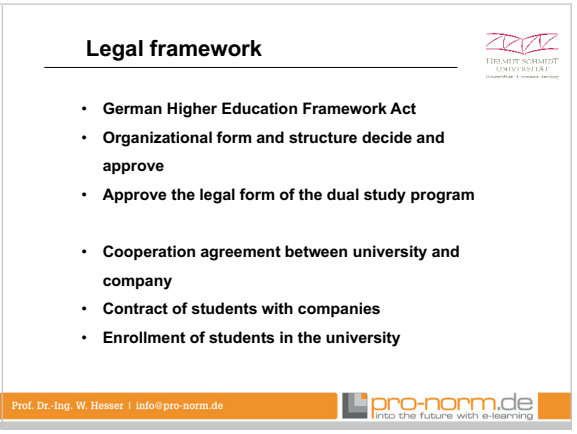

Fig. 2

Fig. 3

Fig. 4

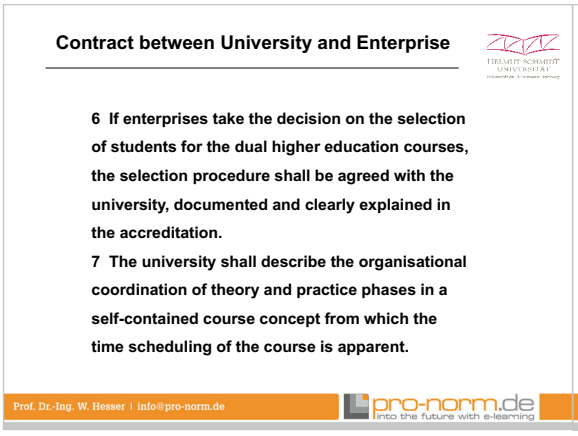

Fig. 5

Fig. 6

Fig. 7

Fig. 8

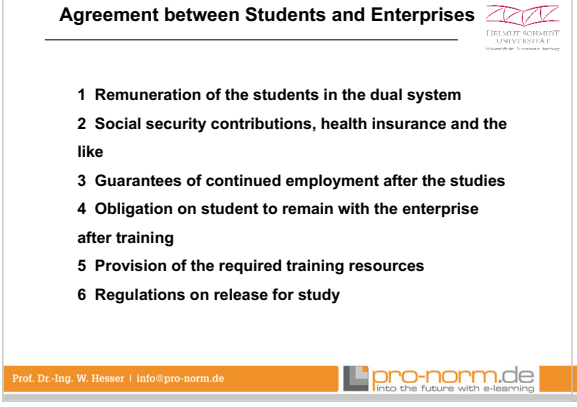

Fig. 9

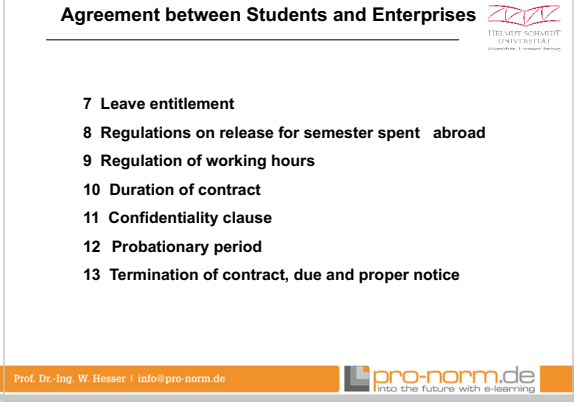

Fig. 10

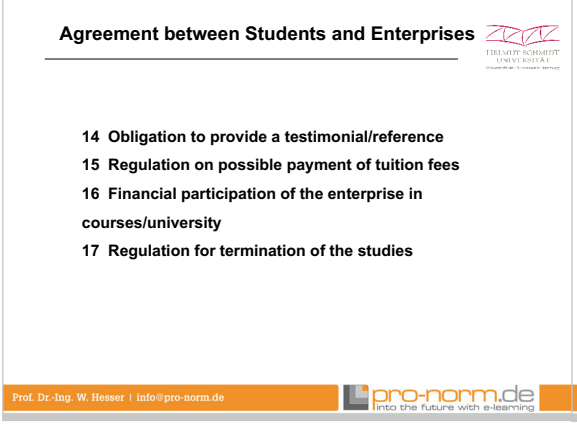

Fig. 11

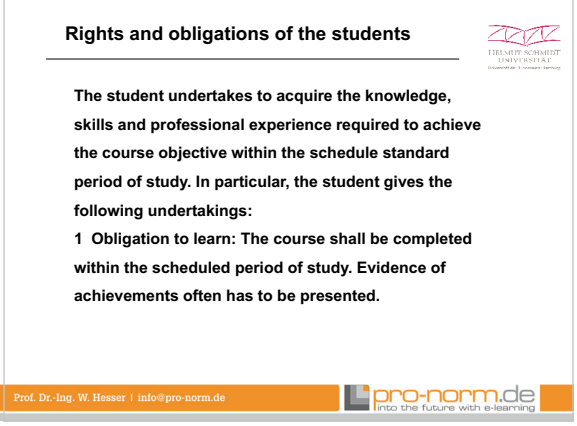

Fig. 12

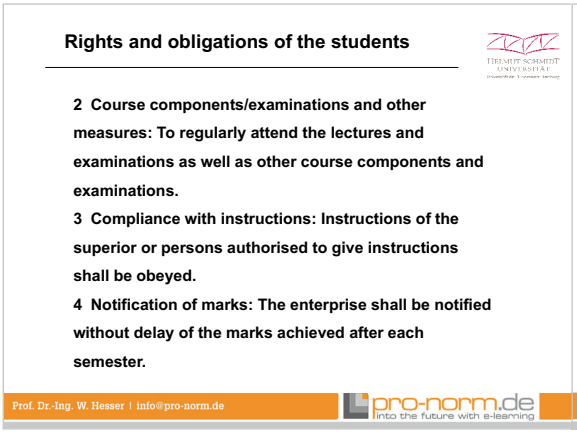

Fig. 13

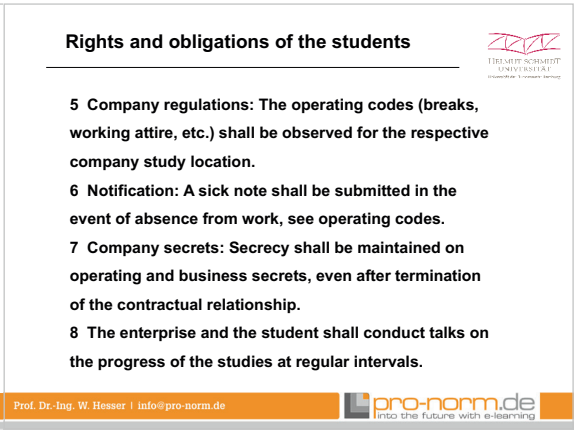

Fig. 14

Fig. 15

Fig. 16

Fig. 17

Annex: Agreement “University and Company”

COOPERATION FRAMEWORK CONTRACT

for the dual study course

NAME OF THE COURSE

BETWEEN

NAME OF THE UNIVERSITY OF APPLIED SCIENCES / COLLEGE/OTHER UNIVERSITY

AND

NAME OF THE COMPANY / CHAMBER / VOCATIONAL COLLEGE

Preamble

The parties intend to make a contribution to innovation in the education sector with the dual study course referred to above. Both parties will work together actively on the integration of the higher education and practical experience in work. The target group for the dual study course is in particular people who as a rule have no practical occupational experience and who wish to combine studies with practical training. Here both parties are seeking reliable cooperation so that the goals of the dual study course and in-company training can be achieved with coordination of content, organisation and time. The present contract sets out the principles of the cooperation.

§ 1 Subject of the contract

The parties to the contract will cooperate with the implementation of the dual study course. The dual study course consists of a practically-orientated study at the college and in-company training provided in the form of vocational training (per BBiG [Vocational Training Act] or HWO [Crafts Code]) or in another form of practical training in the company.

The training at the college is provided in the NAME OF THE SPECIALIST DEPARTMENT specialist department.
Course of study: NAME OF THE DUAL STUDY COURSE
Qualification: DEGREE

and the in-company training in the company is in the following training occupation: Name of the vocational qualification sought per BBiG/HWO

or in practical training in the following field: NAME OF THE FIELD

§ 2 Joint committee

(1) A committee (coordination committee) is to be set up at the college to coordinate the content and organisation of the course and the in-company training. The company will send a person responsible for the practical training or will appoint a suitable representative. The college will appoint a coordinator responsible for the course of study within the college. Once the course has been set up, a student member is also to be appointed.

(2) The coordination committee determines the selection procedure per § 5 Tools and criteria (minimum standards) for the selection of applicants.

(3) Committees may be formed for individual tasks. Persons who are not members of the coordination committee may also work in these committees.

§ 3 Capacity planning

(1) An annual supplementary contract is to be concluded for each new annual intake of students. In this supplementary contract, XX months before the start of the first semester the parties to the contract agree how many places are to be made available. The company initially intends to propose NUMBER people for registration per year.

(2) If there are more applications than course places available, the NAME OF THE SPECIALIST DEPARTMENT specialist department of the college may apply to the relevant ministry for the number of admissions, taking into account the course places agreed in the annual supplementary contracts.

§ 4 Admission to the course

(1) The standard conditions for admission to a course at a university of applied sciences or to degree courses at other universities (as a rule Hochschulreife or Fachhochschulreife [higher education entrance qualifications] (§ 65 HochSchG [Higher Education Act])) apply to admission to the study course.

(2) In addition, students evidence a training contract (per the relevant applicable version of BBiG or HwO)* or apprenticeship contract * with the company referred to in this framework contract.

* Please delete if not applicable

§ 5 Selection procedure

(1) The company undertakes to observe the college's formal conditions for admission in its selection procedure. The selection procedure is to be scheduled so that the selected applicants can start their studies in the following summer/winter semester*. The company shall check the applications received. The applicants must fulfil the standard admission conditions per § 65 HochSchG.

(2) The company selects the applicants according to the criteria stipulated by the coordination committee.

(3) The company registers the students by name ….. months before the start of the semester referred to in Paragraph 1 at the latest. The university of applied sciences handles the registration procedure and requests the necessary documents from the future students.

§ 6 The college's duties

The college undertakes to register the students who meet the conditions of § 4 and have been selected as per § 5. The specialist department undertakes to ensure provision of the course(s) offered in accordance with the examination regulations, the curriculum and the module manual for the NAME OF THE DUAL STUDY COURSE course. The specialist department will discuss the basic concept of these examination regulations, the curriculum and the module manual and any subsequent amendments required with the cooperating company in the coordination committee.

§ 7 The company's duties

(1) The company undertakes to deploy the students in line with the agreed training goal in the agreed practical training periods during the dual study course. In addition, it will work with the NAME OF THE SPECIALIST DEPARTMENT specialist department to achieve the goal of the coordination of the practical work with the content of the teaching. All elements of effective integration are to be employed e.g. the use of people from the company and the college specifically to coach the students. The students will be free during lecture times to attend lectures. In so far as it is specified between the cooperation partners that vocational training per BBiG/HwO is integrated into this dual study course, the company undertakes to give the students an opportunity to pass the relevant examination with the chamber concerned. In this event, the cooperation parties shall work towards supporting the students with passing their examinations.

(2) If the company terminates contracts with students per § 4, it shall inform the college without delay. The college shall inform the students concerned of the form in which further study is possible and what progress already achieved may be counted towards further study. This also applies in the event of termination of the contractual relationship by the student.

(3) The company shall check in what form the college can be supported by the provision of staff (e.g. for teaching assignments, foundations), the cost of materials, capital investment and other contributions.

(4) The company will be entered in the course database (http://dualehochschule.rlp.de/studiengaenge/) of the Duale Hochschule Rheinland-Pfalz (DHR, Rhineland-Palatinate Cooperative State University) as a cooperation partner linked to the dual study course(s) offered. To this end, Annex 1 to the cooperation contract is to be filled in and sent to Duale Hochschule Rheinland-Pfalz. If the reply form is not received at DHR within three months following conclusion of the cooperation contract, you will be automatically shown with your company name, logo and address and also a link to your website in the course database.

§ 8 Timetable for the running of the training course

The college and the company shall develop a timetable for the running of the dual study course. This will become part of the cooperation contract. The timetable will specify in a binding manner what proportions of time and resulting workloads (in ECTS/workload) must be spent at the various training venues. The timetable also shows information about what knowledge and skills gained are mutually recognised by the cooperation partners.

§ 9 Duration of the contract

This contract is concluded for an indefinite period.

§ 10 Notice of termination

This contract may be terminated in writing by either side with a notice period of one year. The partners shall allow existing annual intakes to the dual study course to complete their studies.

§ 11 Invalidity

If individual terms of this contract are or become invalid, this does not affect the validity of the rest of the contract. In such an event, the parties to the contract undertake to replace any invalid term with a legally valid term that comes as close as possible to the intended result.

§ 12 Amendments to the contract

Amendments or supplements to this contract must be in writing.

Place, this Date

For the cooperation company:	For the college
_____	_____
Name and position	The Principal
	_____
	The Dean of the Specialist Department
	_____
	The Head of the Course

COOPERATION FRAMEWORK CONTRACT

Annex 1 – Reply fax: “Entry in DHR’s cooperation partner database”

Fax number: 06131 – 628 8509

Firm: Name

Point of contact for approval: Surname, first name

☐ I consent only to the name (company name, address, logo) and website link of the company being shown in the course database.

☐ I hereby consent to the publication of the following data in the course database of the Duale Hochschule Rheinland-Pfalz.

Point of contact in your company for training and studies

Name: Surname, first name
Position: Job title
Telephone: Telephone number / extension
Email: Email address

Address for applications

Name: Surname, first name
Department: Name of the department
Address: Street and door number / postbox
Postcode, town: Postcode, town
Email for online applications: Email address

Link to the company’s website ☐ Yes ☐ No

Company address (if different to the address for applications)

Company: Company name
Address: Street and door number
Postcode, town: Postcode, town

COOPERATION FRAMEWORK CONTRACT

We are cooperation partners for the following courses of study

- Name of the course of study and college
- Name of the course of study and college
- Name of the course of study and college

Freeform text:
Specific text about your company or the dual study course

Date _____ Signature _____

Please send us the **reply form** by fax to 06131-628 8509 and your **firm's logo** as an image file by email to: info@dualehochschule-rlp.de

General Notes on the Sample Higher Education Contract for Studies with Practical Training (Bachelor’s Programme)

Kempten University

- Form fields to be customised as applicable

- The student must be enrolled at the University of Applied Sciences – **Kempten University**.
- The contract comprises a main part and an annex in which the company placement phases are defined.
- The company placement phases described in the Higher Education Contract can be both voluntary internships (according to Sec. 26 Vocational Training Act (*Berufsbildungsgesetz*, “BBiG”) as well as mandatory internships (according to the Framework Act for Higher Education (*Hochschulrahmengesetz*, “HRG”).
- The course of studies with practical training, however, does not include vocational training in the definition of the BBiG.

Comment: This sample contract serves merely as guidance. In spite of the greatest care applied in the drafting of this sample contract, **no** liability for the content is accepted.

Higher Education Contract

for Studies with Practical Training (Bachelor's Programme)

at the University of Applied Sciences – referred to as "*Kempten University*"

In the degree programme

Between the Company *- hereinafter referred to as "Company" -*

Company name	
Street	
Postal code/City	

and the Student *- hereinafter referred to as "Student" -*

Mr/Ms	
Street	
Postal code/City	
born on	
born in	
if applicable, legal representative,	

the following Higher Education Contract is concluded.

Preamble

The aim of the degree programme with practical training is to help the Student's development closely oriented on practical experience, and to support his/her direct entry into employment after completion of the degree programme.

The degree programme with practical training is a demanding model in which studies are combined on a dual track with practical work experience according to the quality standards of *hochschule dual*. It requires strong commitment and a high measure of personal responsibility from the Student. The Company will support him/her within the scope of its possibilities.

During the degree programme with practical concentration, the phases of theoretical studies at *Kempten University* and company placement phases alternate.

§ 1 Subject of the contract

1. The subject of the Higher Education Contract is the agreement between the parties on the company placement phases as part of the student's degree programme with practical training at *Kempten University*. The quality standards of *hochschule dual* are taken into account in this respect.

2. The Student receives an education that is closely oriented on practice in the degree programme with practical training and he/she receives support for directly entering employment upon completion of the course of studies. However, no legal claim is established for either of the Parties to being taken over into employment after completion of the course of studies.

3. The basic conditions for this Higher Education Contract are:
   a) the student must be enrolled at *Kempten University*;
   b) the company placement phases meet the quality standards of *hochschule dual*.

4. The integration of company placement phases in the degree programme is defined in the "Annex regarding Practical Phases".

§ 2 Term of contract

1. The contractual relationships begins on:
   _____ .
   and ends on completion of the course of studies, expected on:
   _____ .
   The process is defined in the "Annex regarding Company Placement Phases".

2. The Company and the Student can extend the contractual relationship in mutual agreement if the completion of the course of studies within the regular period of studies is not possible by the expected date, e.g. in consequence of a semester abroad or a particularly extensive thesis.

§ 3 Premature termination of the contractual relationship

1. Both parties can cancel the contract prematurely:
   a) by ordinary termination without a statement of reasons up until expiration of the agreed trial period of _____ months as of the start of the contract, in observation of a notice period of one month toward the end of the month.
   b) by ordinary termination without a statement of reasons after expiration of the trial period, in observation of a notice period of 3 months toward the end of the month – insofar as the Student is in the practical semester at the time of termination, the practical semester must also be completed until the end and the notice period must be observed in addition;
   c) by extraordinary termination without notice for good cause, in particular if the obligations pursuant to § 5 or § 6 are not fulfilled.

2. The Company can terminate the contractual relationship prematurely toward the end of the semester in which the Student has failed admission to the next higher semester. In this event, the placement officer of *Kempten University* for the respective degree programme must be consulted by the Company.

3. Termination requires the written form.

4. In the event that the Student is removed from the register of students, the contractual relationship will be terminated.

§ 4 General provisions

1. During the company placement phases, which are part of the degree programme, the Student will remain a member of *Kempten University* including all resulting rights and duties as a student.

2. The provisions on the completion of the practical semesters at State Universities in Bavaria and the statutes on the practical semesters at *Kempten University* (PrS) apply in their respectively valid versions. These are available at *Kempten University*.

3. The company placement phases are a component of the course of studies and they serve to deepen the practical curriculum. Company placement phases at companies can fall within the practical semesters and periods without lectures and exams (15 February to 14 March or 1 August to 30 September). Furthermore, company placement phases can take place while the Bachelor's thesis is being written. Further timeframes can be agreed, subject to the stipulation that the course of studies and the success of studies are not affected thereby. The determination of further timeframes requires the written form and the placement officer or the contact person at the University will be informed thereof.

4. Within the scope of the degree programme with practical orientation, the company will propose a topic to *Kempten University* for the Student's Bachelor's thesis and grant the Student the opportunity to complete these tasks for the Company. The student undertakes to treat the topics presented in agreement between *Kempten University* and the Company. For the Bachelor's thesis, the rules of the Framework Examination Regulations, the General Examination Regulations of *Kempten University* and the respective study and examination regulations of *Kempten University* shall be observed, in particular the deadlines specified therein and the required agreement of the examination board of the degree programme.

§ 5 Duties of the Company

The Company undertakes

1. to train the Student according to the subject matters of the course of studies and to offer him/her professional guidance and supervision;

2. the student shall be enabled to participate in the lectures and exams accompanying the placement phases at *Kempten University* and to grant him/her leave from work for this purpose;

3. to review the placement reports to be written by the Student and to keep informed about the progress of studies;

4. to issue a reference letter providing information about Student's achievement of training objectives as well as the placement phases and any absences from work.

§ 6 Duties of the Student

The Student is obligated to conduct him/herself according to the educational purpose, in particular

1. to take advantage of the offered opportunities to gain practical experience and, in the process, to observe the regular weekly placement time of _____ hours during the company placement phases as listed in the Annex, and to report any absence from the placement to the Company without delay;

2. to perform with due care all tasks assigned within the scope of the placement phases;

3. to follow the instructions given by the Company and the people authorised by it;

4. to observe the rules applicable at the Company, in particular work instructions and accident prevention regulations, as well as regulations on non-disclosure obligations and to continue treating any company-internal knowledge that has been obtained as strictly confidential even after termination of the contractual relationship;

5. to draft placement reports within the prescribed period according to the University's relevant guidelines for practical semesters;

6. to inform the Company of the concentrations to be elected for the course of studies;

7. to present to the Company the report sheets issued by the University on the proper and successful course of studies after each semester (printout of grade certificate from the self-serve portal);

8. to present the enrolment certificate/semester re-registration on time.

§ 7 Remuneration or other benefits

1. During the term of the contract, the Company shall pay monthly remuneration.
   In the 1st year of studies: EUR _____
   In the 2nd year of studies: EUR _____
   In the 3rd year of studies: EUR _____
   From the 4th year of studies: EUR _____
   If a delay at the Student's fault occurs during the studies, which is tolerated by the Company, an agreement on remuneration in the specific case can be made, which shall be subject to the written form.

2. Agreements on special payments during the company placement phases require the written form.

3. The remuneration shall be paid irrespective of a subsequent start of employment at the Company.

4. The remuneration and benefits paid within the scope of the Higher Education Contract are deemed income that has to be taxed if applicable.

5. Other benefits
   _____
   _____
   _____
   _____

§ 8 Working time and holiday leave

1. The regular working time during the company placement phases shall be determined according to the Company's customary working time according to labour agreements of a full-time employee.

2. The regular place of work during the company placement phases is _____. Other places of work can be agreed as needed.

3. A holiday leave entitlement is held for at least _____ working days per year during the lecture-free periods. The leave entitlement shall be oriented on the valid labour agreement or the Federal Leave Act and on the quality standards of *hochschule dual*.

4. Leave shall be taken in the semester breaks during studies and, if applicable, during the annual company vacation. During the leave, the Student may not exercise any gainful employment that opposes the Company's interests or impairs the progress of studies; commencement of gainful employment must be reported to the placement Company.

§ 9 Insurance cover

1. By operation of law, the Student will be insured for accidents during all company placement phases completed in the domestic country (Sec. 2 (1) no. 1 SGB VII [Social Security Code, Book VII]. On occurrence of an insured event, the Company shall also sent *Kempten University* a copy of the accident report.

2. For practical semesters or company placement phases abroad, the Student shall see to sufficient accident insurance cover him or herself.

3. On request by the Company, the Student shall conclude a liability insurance that is adjusted to the duration and content of the Higher Education Contract and present proof thereof to the Company in the beginning of the placement phases.

4. For the time of the contractual relationship in the domestic country, the Student shall be subject to the insurance requirement for health, nursing, pension and unemployment insurance in the same way as employees in vocational training.

§ 10 Miscellaneous agreements

1. Changes and amendments to the Higher Education Contract as well as side agreements and other arrangements between the Parties require the written form. This provision as well can only be cancelled in the written form.

2. Should individual provisions of this contract be invalid, the validity of the remaining agreements or of the Higher Education Contract on the whole shall not be affected thereby. Insofar as provisions have not become part of the contract or if provisions are invalid, such provisions shall apply as agreed, which come closest to the meaning and purpose of what was intended under the contract by the invalid provision.

3. Each of the parties to the contract as well as *Kempten University* receives one signed executed copy of this contract.

4. Further agreements

_____ , on _____

_____
Student

_____
Company

_____
Legal representative of the Student

Advisor of the degree programme with practical training

Model:	Degree programme with practical training
Degree programme:	
Company:	
University:	
Student:	

Advisor of the degree programme with practical training:

Name:	
Phone:	
Email:	

The Advisor is the Student's and the University's point of contact for all questions relating to the degree programme with practical training.

The point of contact at the University for formal and organisational questions relating to the degree programme with practical training:

Name:	
Phone:	
E.MEmail:	

Supplement on the confirmation of the practical semester and additional company placement phases in the [winter] [summer] semester [year]

within the scope of dual study programme at Kempten University

The Training Company

(company, authority, institution)

(address, phone, email, web)

confirmed

_____

(last name, first name)

☐ Student (female ☐ / male ☐) of Kempten University in the degree programme

_____

for the period from 01/10/2020 to 14/03/2021

to be able to complete the practical semester and additional company placement phases.

Company training/placement phases

Company training phase	
Company training and placement phases	
Practical semester (at the company)	01/10/2020 – 14/03/2021
Bachelor's thesis (partly at the Company)	
COMPLETE term of contract	E.g. 01/10/2018 – 14/03/2022

The Placement Supervisor during this period is [Mr/Ms] _____

be reached at the email address _____ and phone no. _____

_____
(signature, company stamp)

Kempten University agrees to the completion of the practical semester and the additional placement phases at the aforementioned Training Company. The contact for all substantive and functional questions is the Placement Officer for the course of studies according to the (Prs) Statutes on Practical Semesters

Kempten, on _____ _____
(Placement Officer / Professor)

In addition to this Supplement, place find a copy of the employment contract on the dual study programme.

Planned subjects of the practical semester

Note:
About this information regarding the practical semester, please see http://www.hochschule-kempten.de/studium/praxissemester-pflegepraktikum/download-wichtiger-dokumente.html
The module manuals of the courses of studies also provide further guidance regarding the requirements profile. http://www.hochschule-kempten.de/studium/angebot-studiengaenge.html

Notes on the completion of the practical semester and the additional placement phases

(1) The practical semester is a part of the degree programme and, including the lectures accompanying the practical training, it usually extends over an uninterrupted period with a prescribed duration that is defined in the respectively valid study and exam regulations. It is completed at companies and other institutions outside of the University under the supervision of the University and it integrates studies and professional work experience. During the practical semester, the Student remains a member of the University. The regulations issued by the Bavarian State Ministry for Sciences, Research and the Arts as well as the University on the basis of the Bavarian Higher Education Act in their respectively valid versions apply to the practical semester.

(2) The Training Company undertakes
1. to train and provide professional guidance and supervision to the Student within the specified period for the aforementioned practical semester according to the training schedule and the specified further regulations;
2. to issue a confirmation to the Student before the beginning of the practical semester that the placement phase of the practical semester will be completed at the Company for the respective minimum period that is specified for the relevant course of studies. The University must agree to the recognition of this period as practical semester;
3. to enable him/her to attend the lectures and take exams accompanying the placement phases. There is no obligation for the Training Company to grant leave to the Student to attend lectures of theoretical semesters or lectures of general educational electives;
4. to review and sign off on the report to be drafted by the Student and to keep informed about the progress of studies;
5. to issue a reference letter within due time, which covers the respective requirements for the training objective as to the success of the training, and which specifies the period of the completed placement phases as well as any absences;
6. to appoint a training supervisor.

(3) The Student undertakes
1. to take advantage of the offered training opportunities and in doing so, to observe the daily training time, the customary working time at the Training Company;
2. to perform with due care all tasks assigned within the scope of the training schedule;
3. to follow the instructions given by the Training Company and the people authorised by it;
4. to comply with all regulations valid at the Training Company, in particular work instructions and accident prevention regulations as well as non-disclosure regulations;
5. to write a report within the prescribed period according to the University's relevant guidelines, which shall cover the contents and course of the practical training, and to report his/her absence to the Training Company without delay.

(4) The Student is regularly not entitled to holiday leave during the practical semester. Interruptions due to leave or illness shall generally be made up for (exceptions, see § 2 (3) PrSV).

(5) By operation of law, the Student will be insured for accidents during in the practical semester completed in the domestic country (Sec. 2 (1) no. 1 SGB VII [Social Security Code, Book VII]. On occurrence of an insured event, the Training Company shall also send a copy of the accident report to the University.

(6) For practical semesters abroad, the Student shall see to sufficient accident insurance cover for health, accident and liability him or herself.

11 Development of a course of dual higher education study

11.1 Prerequisites and procedures for a dual course of higher education study

Dual higher education study, a form of study that links academic studies at a university with practical training or qualification measures in an enterprise, has become more important in recent years, not only in Germany but also internationally. Within the last ten years, the number of students within the dual system in Germany has risen from just under 40,000 to more than 100,000[1]. More and more enterprises appreciate this study model and view it as a good opportunity to recruit high achievers or future managers for the enterprise and retain them in the long term. Enterprises see the more distinct practical orientation amongst these top achievers and managers as a crucial factor for their long-term business success.

During the course of various projects entitled "Implementation of a Dual-Mode System of Courses" in Thailand in January 2015 and in February 2016 as well as in Kazakhstan in 2017, we were able to observe that managers, and hence the decision-makers, were fundamentally interested in participating in and promoting dual models of higher education, and particularly the model integrating work experience. The introduction of dual study courses, which guarantee a higher level of practical relevance for students, represents an attractive option for many countries as a means of achieving a better coordination between university education and the needs of the labour market, and hence the enterprises.

To be precise, this Chapter will present the approach and the experiences in the project development and implementation of a dual course of study at a university.

The special feature of these projects was the atmosphere of suspense in which the projects were developed by the participants at the universities. In the process, it was important to determine the needs for expertise, identify any obstacles or barriers and verify any potential within the enterprises for a course integrating work experience, i.e. to achieve closer links between professional qualification and academic higher education.

The objective was to define and plan a project for dual course of higher education study at the respective universities.

To our knowledge, a manual and workbook on implementing a dual course of study does not currently exist in Germany and was missing during the definition, planning and implementation of a dual higher education programme.

Participants therefore developed a project definition and plan to establish a dual course as part of the project work.

1 Statistisches Bundesamt [Federal Statistics Office], December 2017. Zahl der dual Studierenden in Deutschland, Wintersemester 2016/2017 [Number of students within the dual system in Germany, winter semester 2016/2017]

The project definition and project plan to establish a dual course of study were plannedmit der Erfahrung der Projektvorbereitung 2014 in Deutschland,

- with the experience of the project preparation in 2014 in Germany,
- with the advice from several enterprises in Hamburg and its surroundings,
- with systematic documentation of the respective infrastructure, organisation and documentation of dual courses of study within the enterprises in Germany,
- through the cooperation with various coordinators for the dual system of study at universities,
- but especially with coordinators for the dual system of study at various higher education establishments, in particular the University of Applied Science, Hamburg (HAW), and
- with Mr Marx of the South East European University in Tetovo, Republic of Macedonia.

Our focus in the project preparation during 2014 was directed particularly towards the systematic documentation of the respective infrastructure and organisation for dual courses of study within enterprises in the Hamburg area, with the training and qualification concept that we developed being organised in several phases over a period of three and a half years. The enterprises provided the documentation required for this. A further preparatory step involved the analysis of various web platforms of "Berufsakademien" (colleges of advanced vocational studies) and universities that offer dual courses of study.

The objective of this analysis was to record structures and documents on

- establishing a dual course of study for universities and on the
- organisation of a dual course of study at universities and colleges of advanced vocational studies.

A further step involved conducting interviews with coordinators (approx. ten interviews) at colleges of advanced vocational studies and universities with the aim of establishing and documenting the infrastructure and organisation of dual courses of study.

The overall results were defined at the end of 2014 on the basis of a discussion with various coordinators for dual courses of study in a project plan with approx. 30 subprojects. During this process, all the subprojects were described in detail in terms of their content and according to personnel capacity and duration.

11.2 Development of a project plan for a dual course of higher education study

The introduction to the project "Dual higher education study" developed as follows in the respective foreign universities: from an initial "Description of task", an overview was then provided of the overall assignment and presented for discussion.

In detail, this involved performing presentations and supplying documents[2] on the topics listed below and then submitting them to the project team for discussion.

1 History of dual higher education studies in Germany
2 What is the content of a dual course of study?
3 Benefits of a dual course of study
3.1 Benefits for the university
3.2 Benefits for the students
3.3 Benefits for the enterprise
4 Implementation of a dual course of study
4.2 Legal framework
4.3 Organisation form
4.4 Recommendations of the German Council of Science and Humanities
4.5 Presentation for the university management
4.6 Presentation for the industrial associations
5 Article
5.1 The dual higher education study – An introduction
5.2 Quality standards for the dual courses of study
5.3 Organisation for a dual course of study
5.4 Explanatory notes on establishing a dual course of study for universities
5.5 How is a dual course of study organised and what structural features exist?
5.6 On the infrastructure of a dual course of study

With hindsight, this procedure acquired a special status, firstly in relation to the following project discussion but also and especially with reference to training and qualification of the project participants. The decision to develop and introduce a dual course of study is of strategic importance for the universities and was therefore taken by the management. The team members mainly had no experience of organising a dual course of study, meaning that their training and qualification was therefore a matter of priority. The language barrier, in this case English, presented an additional challenge for the participants.

The aims of project planning were to define the scope of the project and the subprojects resulting from this and to draw up plans for the time, costs and resources. In large projects, there is also a need to produce plans for communication, quality and risk management.

In practice, the aims of a project are only roughly outlined after the initiation phase. These aims undergo further subdivision and precise definition during the project planning stage.

As described above, this preliminary work was carried out in Hamburg in autumn 2014 with various partners by drawing up a project plan with approximately 30 subprojects that were intended to provide the team members with a basis for discussing the establishment of a dual course of study.

The next step was to hold several workshops, starting with a presentation on project management, project planning, organisation and control, including terminology and the like. During the following days, this knowledge base together with

2 See Chapter 1, Sections 1.1 to 1.8

a common and uniform idea of the project planning resulted in a lively and informative discussion on the subprojects and the associated individual assignments, such as capacities and duration of activities as well as responsibilities and results.

11.3 Analysis of the most important and most difficult subprojects within the project plan

As part of a workshop, an initial discussion dealt with the completeness of the subprojects before moving on to discussing the priorities of the individual subprojects and drawing up a list of priorities with 13 subprojects (weighted) with the aid of metaplan techniques:

- Design and authorize – project plan, milestone plan, capacity plan (32)
- Design and authorize a marketing concept or advertising strategy (14, 15, 16)
- Design and authorize – assessment procedure – in cooperation with companies (18)
- Define evaluation form for enterprises (24)
- Design and authorize – cooperation agreement for university – enterprises; students – enterprises (12)
- Establish a Center for dual-mode study; development of an organisational structure dual mode study program (31)
- Draw up training plan for the enterprises (19)
- Examine curriculum for mechanical engineering (07)
- Specify financing model (27)
- Plan course procedure for a DS at the Thai University (08)
- Draw up course and examination regulations for DS (11)
- Specify quality assurance (26)
- Specify quality assurance for course (25)

Another workshop concentrated on the issue of the "most important and most difficult subprojects". Here too, participants took the decision after an in-depth discussion with the aid of metaplan techniques and a ranking procedure.

Analysis of the most important projects

19 (7P), 12 (5P), 7 (5P)
19 Task: Draw up training plan for the enterprises
12 Task: Draw up cooperation agreement for university, company, student
07 Task: Examine curriculum for mechanical engineering

Analysis of the most risky projects

26 (7P), 12 (5P) 27 (5P)
26 Task: Specify quality assurance
12 Task: Draw up cooperation agreement for university, company, student
27 Task: Specify financing model

11.4 Development of an overall project plan, milestone plan, etc.

A next step or workshop presented the project plan. An initial discussion dealt with the method. Agreement was reached with the participants that essential information for a project plan had been drawn up, e.g.

- Completeness of the subprojects, including the estimate of personnel capacity, the time capacity, the duration and the appointment of a responsible person
- Selection of the most important and probably most difficult subprojects

Furthermore, a workshop was held to allocate the subprojects by priorities to the following project sections

- short-term project plan,
- medium-term project plan,
- long-term project plan.

Here, too, lively and informative discussions on the priority of individual subprojects took place, with one example being "Design and authorise a marketing concept or advertising strategy". One of the points raised in this discussion concerned which section was to include implementation of the marketing project in order to achieve the correct positioning.

The results produced, which were clearly documented for all concerned on metaplan boards, supplied a good basis for preparing a milestone plan. A milestone plan marks the beginning of a project phase, the phase release / project release or the end of a project phase. The milestone plan allows those working on the project to remain continuously involved, offers experiences of success and synchronises cooperation within the team. It is therefore also a means of leading and motivating the team members. At the same time, the milestone plan serves to examine the project objectives, with the inspection criteria often being recorded as checklists or forms.

Project planning began, as already outlined previously, with a presentation on project management. This simultaneously acted as a knowledge base for a common and uniform conception of project planning and also contained a section on the milestone plan. Participants conducted an informative discussion on the development of a milestone plan and on the positioning of the individual subprojects with their respective priorities: namely whether they were short-term, medium-term or long-term projects. The result was a project plan drafted manually, which provided a good overview of the project work for the next two years.

Project management software would definitely have made project planning easier because it would then have been possible to display a critical project path. Unfortunately, neither the personnel nor the corresponding software was available.

This does not in any way detract from the result of the project planning, particularly because a major common consensus was achieved within the team.

At the close of the discussion, there was agreement on the fact that introducing a dual course of study in the timetable defined by the university management

would represent a challenge for the team and particularly for the project management as well.

11.5 Presentation of a training/qualification plan

In the subsequent discussion on important projects, the subproject "Development of a training/qualification plan for dual system students in enterprises" occupied top priority.

Preliminary work was also carried out in this connection with the support of Hamburg enterprises. The preliminary work involved compiling a collection of documents over the entire course duration of three and a half years (the Bachelor course has at least seven semesters) together with the coordinators within the enterprises and with several coordinators for the dual course of study at universities. We defined the phases 0 to 7, i.e. from the application within the enterprise through to completion of the course of study with the Bachelor thesis.

Phase 0 contains tests on the Internet with more general socially oriented questions but also tests with mathematical, physical, technical, linguistic and psychological contents – in other words, tests for self-assessment or as an admission requirement for a university, and here in particular for private universities.

In Phase 1 documents were assembled for use as part of an in-company assessment procedure (in some cases over two to three days). Starting with psychological, technical and English-language tests, these also included a test of group-dynamics extending to a comprehensive test for the dual course in engineering sciences. As a supplement in this Phase 1, tests were also compiled in mathematics and mechanics for the preliminary studies or even entry tests (various universities examine the engineering science students in a comprehensive test during the first week of studies) from various universities and colleges.

With Phase 2, applicants have successfully completed the assessment, are matriculated at the university and are spending the first day as a student within the dual system in their enterprise.

This is when the introductory phase or induction plan begins. In two to ten days, depending on the enterprise, students are instructed in the essential basic rules of the company. This starts with the general safety regulations and data security requirements and extends all the way to telephone training. In addition, enterprises train the students in Excel, PowerPoint, Word, SharePoint for project and resources management as well as in the company's specific IT technology. However, the enterprises also invest time in telling students about the company history as well as providing them with in-depth product information. Communication training and team-building measures also take place in the initial weeks.

Phase 3: The contents depend on the specific course in the engineering sciences (mechanical engineering, automotive engineering, shipbuilding, information technology, etc.). A distinction should be made here between the preliminary placement with a duration of 12 or 13 weeks and the main placement of approx. 14 weeks' duration. The requirements are defined in writing in the curriculum but are in some cases implemented within the enterprises in very different ways and also documented by students in different ways. As a minimum

standard, the university expects a written confirmation of the achievement from the enterprise on a form.

Phase 4 describes the further qualification of the students in the course with extended practical component in the first year of study. The enterprises largely have a training or qualification plan for the first year, which essentially comprises a departmental plan for each individual student. The departments describe the objectives and contents of the training and qualification measures in a training/qualification profile or even a summary for the department. At the same time, it should be pointed out that theory/practice modules coordinated in line with the university's module manual are only present in a few enterprises[3]. After each period spent in a department, the student attends an assessment interview or prepares a work experience or project report. Phases 5 and 6 are combined. Students are in their second year of study and are often deployed in the normal daily operations of the enterprise in accordance with the departmental plan, but also take on small projects for which they are personally responsible. The further qualification of the students within the course of study with extended practical component takes place in a very individual manner, according to the course specialisation and the interests of the enterprise. The foundation for the qualification of the students within the enterprises should essentially be theory/practice modules coordinated with the semester or project work in the various departments, which students carry out within the team with a greater or lesser degree of independence, according to the progress of their studies.

Phase 7 is when the decision on the Bachelor thesis takes place. This decision is taken in consultation with the university and the enterprise. The Bachelor thesis is often carried out in the department in which the student has been taken on.

One result of the discussions was the recommendation of a curricular development for a qualification concept for the practical phases based on "theory/practice" modules for a dual course of study. In the basic and main stages of the dual course of study, theory/practice modules take on the function of a didactically coordinated and integrated scenario for the course venues of enterprise and university. The theory/practice modules should be oriented towards the process structure of an enterprise. During the course, they are based on the dual course of study within the university and its strategic direction with reference to the combination of subjects in the basic and main stages of the course.

The curricular development of "theory/practice modules"[4] into a qualification concept requires close cooperation between the enterprises and the university and provide the foundation for successful cooperation with the enterprises and consequently for a successful and recognised dual course of study.

It is important to point out that in Germany, although recommendations from the German Council of Science and Humanities, the Accreditation Council and the Federal Institute for Vocational Education and Training (BIBB)[5] for structur-

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3 In this connection, see Chapter 4: Development of a qualification concept…

4 BERWALD, ULRICH; WALTER, HERMANN; Meisterbrief und Diplom im dualen Studium simultan erwerben [Simultaneously acquiring master craftsman's certificate and university degree in dual higher education study] Weiterbildung am Studienort Betrieb; Fachliche Betreuung: [Further education in the company as learning venue; technical supervision:] BIBB (Dr. Dorothea Schemme, Kerstin Mucke). BIBB, BWP 2/2006, p. 40–41

5 See Chapters 4, 5 and 8 in this connection

ing the practical phases within the dual course of study with extended practical component do exist between the university and the enterprise, no binding framework plans for qualification of the students within the dual system are stipulated. The qualification measures for the dual students are largely structured at the discretion of the enterprises. This means that approx. 100,000 (in 2016/2017) dual students (if the students with integrated professional training are included after completion of their apprenticeship) undergo predominantly individual training and qualification measures carried out by the enterprises. It is therefore considered absolutely essential to specify minimum standards for the in-company learning and working phases (e.g. by prescribing learning objectives, drawing up a flowchart for the student's progress through the company departments, specifying contacts, qualifying the training personnel).

11.6 Development of a curriculum and presentation of the organisational structure for a dual course of higher education study

A further focus of the consultancy was concerned with development of the curriculum for the course in Manufacturing Engineering. Curricula from various courses with extended practical components at universities in Germany were presented and then became the subject of intense discussion. Examples of the universities were:

- Hochschule für Angewandte Wissenschaften Hamburg (University of Applied Sciences, Hamburg),
- South East European University, Macedonia
- FH Aachen (University of Applied Sciences) – Fachbereich Maschinenbau und Mechatronik (Faculty of Mechanical Engineering and Mechatronics)
- FH Lübeck (Lübeck University Of Applied Sciences)
- FH Kiel (Kiel University of Applied Sciences)
- hochschule dual, Bavaria
- Duale Hochschule Baden-Württemberg (DHBW) – Baden-Wuerttemberg Cooperative State University
- ASW – Berufsakademie Saarland (University of cooperative education), but also curricula from
- TU Darmstadt
- RWTH Aachen University and
- KIT Karlsruhe Institute of Technology

Unfortunately, only very limited information is available in English on the dual system of study at universities, so that it was necessary to use the module manuals of TU Darmstadt, RWTH Aachen University and the Karlsruhe Institute of Technology (KIT). The recommendations have been organised as follows:

- development of a vocational profile and qualification framework,
- structure of the course,
- course contents.

The organisational structure, administration and financing of a dual course of study was part of the consultancy services. Details included discussions of the various organisational structures of cooperative state universities and colleges of advanced vocational studies. In the initial step, this concerned explaining the various fundamental models[6].

Among those explained and described in detail were:
- FH Aachen – University of Applied Sciences
- ASW – Berufsakademie Saarland/ ASW – University of cooperative education Saarland
- South East European University, Tetovo, Republic of Macedonia
- Technische Hochschule Mittelhessen – University of Applied Sciences
- hochschule dual, an initiative by Hochschule Bayern e.V.
- Duale Hochschule Baden-Württemberg (Baden-Wuerttemberg; Cooperative State University (DHBW)) (some English-language web pages already exist for this institution)
- and others, too.

The workshop on this subject involved a lively discussion, in particular on the legal status and the committee structure of the respective universities and colleges of advanced vocational studies.

In a further step, the organisational inclusion of the "coordination offices for dual higher education study" into the university was presented as well as the respective tasks of these offices. To illustrate this, it was possible to present coordination offices of universities with differing numbers of courses, with different student numbers and differing numbers of cooperation partners/enterprises[7]. Of particular interest here was the task profile of the employees, because this simultaneously made it possible to convey the diversity and complexity of activities in a coordination office for dual higher education study. The question of the funding model for the dual programme of higher education was answered to the satisfaction of all those present.

Initially the funding of universities and colleges of advanced vocational studies in Germany was clarified, and at the same time attention was drawn to the federal system, meaning the sovereignty of the federal states, but also to the difference between the funding of state and private institutions. One focus of the discussion evolved in connection with a scholarship model for university students within the dual system of higher education. Starting from the committee structure presented for the respective universities and colleges of advance vocational studies in Germany, various scholarship models were developed jointly and discussed as part of a workshop.

6 See Chapter 2: The organisation of a dual course of study
7 See Section 2.1: Infrastructure of organisations in the dual system of study

11.7 Workshop description

Development of a project plan for a dual course of higher education study

Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective.

Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome.

The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of this workshop is to develop a project plan for a higher education programme. Participants are intended to assess the individual subprojects and draw up a list of priorities with the aid of metaplan techniques. A further step including a discussion on difficult and risky subprojects is to follow. Another part of the workshop is to develop an overall project plan, milestone plan and the like.

Workshop schedule:
Form into small groups and discuss the document "11 Development of a course of dual higher education study".

- Forms groups of three and discuss the proposed subproject list. Check that the subprojects are complete.
- Arrange the cards with the subprojects in order of priority and fasten the cards to the pinboard.
- Award five white points for subprojects that are important and five red points for those that are difficult.
- Arrange the important subprojects on the pinboard according to whether they are short-term, medium-term or long-term projects.
- Arrange the subprojects according to their priority, personnel capacity and duration in a time schedule according to the need to carry them out.

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as text and photos

Working resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantity.

Figure 1 to 18 – Chapter 11

Development of a project plan for a dual course of higher education study

Development of a project plan for a dual course of higher education study

Prof. Dr.-Ing. W. Hesser | info@pro-norm.de

Fig. 1

Project development for a dual higher education

Within the last ten years, the number of students within the dual system in Germany has risen from just under 40,000 to more than 100,000.

More and more enterprises appreciate this study model and view it as a good opportunity to recruit high achievers or future managers for the enterprise and retain them in the long term.

Enterprises see the more distinct practical orientation amongst these top achievers and managers as a crucial factor for their long-term business success.

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Fig. 2

Dual degree programs according to disciplines in 2016(in %)

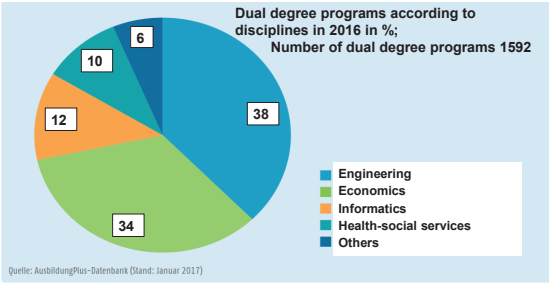

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Fig. 3

Project development for a dual higher education

The project definition and project plan to establish a dual course of study were planned:

- with the experience of the project preparation in 2014 in Germany,
- with the advice from several enterprises in Hamburg and its surroundings,
- with systematic documentation of the respective infrastructure, organisation and documentation of dual courses of study within the enterprises in Germany,

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Fig. 4

Project development for a dual higher education

- through the cooperation with various coordinators for the dual system of study at universities,
- but especially with coordinators for the dual system of study at various higher education establishments, in particular the University of Applied Science, Hamburg (HAW), and
- with Mr Marx of the South East European University in Tetovo, Republic of Macedonia.

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Fig. 5

Project development for a dual higher education

The introduction to the project “Dual higher education study” developed as follows in the respective foreign universities: from an initial “Description of task”, an overview was then provided of the overall assignment and presented for discussion.

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Fig. 6

Project development for a dual higher education

In detail, this involved performing presentations and supplying documents on the topics listed below and then submitting them to the project team for discussion.

1 History of dual studies in Germany
2 What is the content of a dual course of study?
3 Benefits of a dual course of study
3.1 Benefits for the university
3.2 Benefits for the students
3.3 Benefits for the enterprise
4 Implementation of a dual course of study
4.2 Legal framework
4.3 Organisation form
4.4 Recommendations of the German Council of Sciences
4.5 Presentation for the university management
4.6 Presentation for the industrial associations

Fig. 7

Project development for a dual higher education

5 Article:
5.1 The dual of vocational study – An introduction
5.2 Quality standards for the dual courses of study
5.3 Organisation for a dual course of study
5.4 Explanatory notes on establishing a dual course of study for universities
5.5 How is a dual course of study organised and what structural features exist?
5.6 On the infrastructure of a dual course of study

Fig. 8

Project development for a dual higher education

On the basis of a discussion with various coordinators for dual courses of study were defined a project plan with approx. 30 subprojects. During this process, all the subprojects were described in detail in terms of their content and according to personnel capacity and duration.

Draft - Project Plan with Individual Projects

01 Summary of subprojects, capacities, time, manpower, etc.
02 Task: Draw up feasibility study with the team
03 Task: Preparation, drafting of presentations for local DS advertising in Thailand
04 Task: Sounding out of sustainability locally in Thailand
05 Task: Drawing up of first draft of concept for a DS at the Thai University
06 Task: Approval of the DS by the university/faculty

Fig. 9

Project development for a dual higher education

7 Task: Examine curriculum for mechanical engineering, the curriculum has to be supplemented for DS by faculty/university
8 Task: Plan course procedure for a DS at the Thai University
9 Task: Plan the preliminary placement at the Thai University with university and enterprises
10 Task: Plan the main placement at the University with university and enterprises
11 Task: Draw up course and examination regulations for DS
12 Task: Draw up cooperation agreement for university – enterprises; students – enterprises
13 Task: Draw up and discuss a business model
14-17 Tasks: Draw up marketing concept or advertising strategy
18 Task: Prepare selection procedure for students

Fig. 10

Project development for a dual higher education

19 Task: Draw up training plan for the enterprises
20 Task: Specify supervisory body for training procedure
21 Task: Prepare accreditation and certification of DS, e.g. documentation, define responsibility
22 Task: Define organisational form for DS
23 Task: Examine legal framework
24 Task: Define evaluation form for enterprises
25 Task: Specify quality assurance for course
26 Task: Specify quality assurance for practical learning venue
27 Task: Specify financing model for dual study programme
28 Task: Information and communication structure
29 Task: Support concept for students
30 Task: Forming a network of universities to the dual study

Fig. 11

Project development for a dual higher education

A next workshop presented the project plan:

- Completeness of the subprojects, including the estimate of personnel capacity, the time capacity, the duration and the appointment of a responsible person
- Selection of the most important and probably most difficult subprojects

Furthermore, a workshop was held to allocate the subprojects by priorities to the following project sections:

- short-term project plan
- medium-term project plan
- long-term project plan

Fig. 12

Project development for a dual higher education

Summery – Most important Projects for Projectplan

- Design and authorize – project plan
- Design and authorize a marketing concept or advertising strategy
- Design and authorize - asseccment procedure - in cooperation with companies
- Define evaluation form for enterprises
- Design and authorize - cooperation agreement for university – enterprises; students – enterprises
- Establish a centere for dual study

Fig. 13

Milestone plan dual course

Start of the dual course of study
August 2016

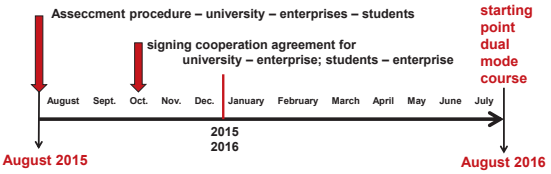
Subject: production technology

30 Students

There should be 300 applicants

Fig. 14

Milestone plan dual course



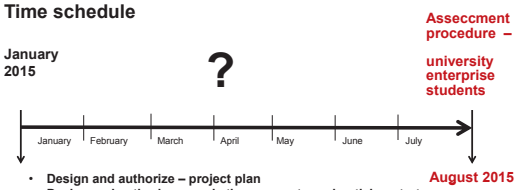
- University enrollment for students

The aim of a common assessment procedure for all enterprises is to prevent any inappropriate fraternisation between enterprise and applicant. The aim must always be to select the best applicants for a dual-mode course of study. This is the prime requirement for a successful course with low failure rates.

Fig. 15

Milestone plan dual course

Time schedule

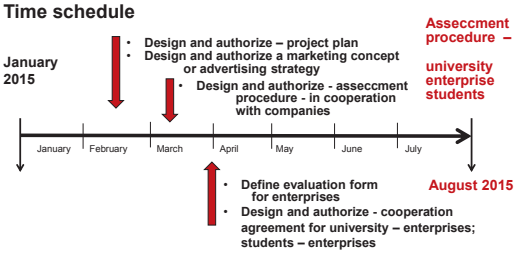


- Design and authorize – project plan
- Design and authorize a marketing concept or advertising strategy
- Design and authorize - asseccment procedure - in cooperation with companies
- Define evaluation form for enterprises
- Design and authorize - cooperation agreement for university – enterprises; students – enterprises
- Establish a centere for dual-mode study

Fig. 16

Milestone plan dual course

Time schedule



- Establish a centere for dual study

Fig. 17

Project plan for dual higher education programme

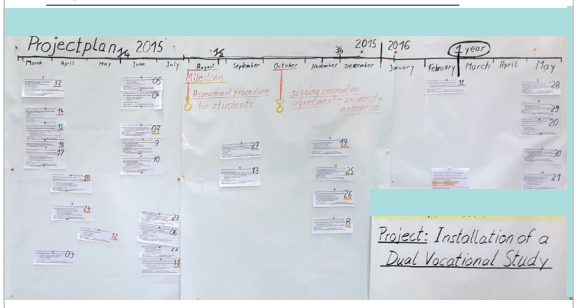


Fig. 18

12 Principles of accreditation and certification for a dual course of study at German higher education institutions

12.1 Accreditation of courses in the higher education sector

This chapter is intended to provide an introduction to and hence create awareness of accreditation and certification at German and European higher education institutions.

Here it is necessary to point out that since 1 January 2018,

- the Interstate Study Accreditation Treaty – Interstate treaty of the länder[1] and the
- Sample Decree pursuant to Art. 4 Section 1–4 of the above Interstate Study Accreditation Treaty[2]. (Resolution of the Kultusministerkonferenz (KMK), which is the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany, of 7 December 2017) have been in force.

The basis for accreditation are the formal and subject-related criteria set out in the interstate treaty as well as the relevant existing regulations (ordinances) under individual state law to specify the criteria defined in the interstate treaty as well as the accreditation procedure itself. The foundation of these regulations under federal state law is the Sample Decree pursuant to Art. 4 Section 1–4 of the Interstate Study Accreditation Treaty which the federal states agreed upon at the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany of 7 December 2017 in order to secure the uniformity required to guarantee state responsibility.

Examination of these two documents reveals that statements on the **quality of dual higher education courses "courses with special profile requirements"** are only made to a very limited extent. See pages 11 and 20 of the justification for the sample decree.

Guidance on the quality assurance of dual higher education courses from the Accreditation Council is regarded as necessary and is expected.

As the topic is extraordinarily complex, we refer to the statements from the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany (KMK), which are reproduced in unabridged form in the following[3].

https://www.kmk.org/themen/hochschulen/qualitaetssicherung-und-qualitaetsentwicklung/; Retrieved October 2017

https://www.kmk.org/kmk/information-in-english.html; Retrieved October 2017

1 www.akkreditierungsrat.de/ Retrieved on 5 February 2018

2 www.akkreditierungsrat.de/ Retrieved on 5 February 2018

3 KMK, www.kmk.org/themen/hochschulen/qualitaetssicherung-und-qualitaetsentwicklung.html; Retrieved October 2017

Responsibility for the quality of study and teaching has always existed and is also demanded under constitutional law whereas the instruments have changed. In the past two decades, far-reaching changes have taken place in the German higher education system, which include the educational reform, namely the change to tiered study programmes (Bachelor/Master) and their modularisation as well as intensive efforts to improve the quality in study and teaching.

Since the 1990s at the latest, the term quality assurance has established itself in the discussion on higher education policy. With reference to study and teaching, this covers aspects such as the preparation for a professional activity as well as the developments in scientific knowledge along with the practising of scientific thought and work. Politicians and the public attach great value to transparency and comparability between the levels of study and qualification, within both the national and international framework, and the efficient use of the funds invested, as demonstrated by the rendering of accounts. The academic feasibility of the study programme within the given time frame, including the opportunity for mobility, is an important aspect, particularly for the students.

The development of a uniform European Higher Education Area started alongside the changes in German higher education policy. The Bologna Process, which began in 1999, is not only associated with the introduction of a new tiered system of study. From the very outset, quality assurance was one of the stated objectives. Consequently, European cooperation on quality assurance was to be promoted in terms of drawing up comparable criteria and methods. The European Association for Quality Assurance in Higher Education (ENQA) was commissioned to develop a system of standards, procedures and guidelines of quality assurance and to examine opportunities for guaranteeing a suitable peer-review process for agencies and establishments involved in quality assurance and/or accreditation. From this emerged the "Standards and guidelines for quality assurance in the European Higher Education Area" (ESG). This document lays down the formal parameters of quality assurance as well as core elements of peer review in an internationally uniform manner.

The German system of quality assurance is also incorporated into the relevant international networks. In the meantime, the German accreditation system has been confirmed in two evaluation procedures with international involvement. In this process, agreement between the German quality assurance system and the European requirements, namely "European Standards and Guidelines" (ESG) and the "European Consortium for Accreditation in Higher Education" (ECA), was expressly stipulated as a prerequisite for full membership of the German Accreditation Council in the "European Association for Quality Assurance in Higher Education" (ENQA).

Accreditation

Accreditation in the higher education sector means the awarding of a quality seal. The accreditation of study programmes represents a key element for assuring the quality of courses. It gives students and employers reliable guidance and creates transparency on study programmes and qualifications in Germany. Since 1 January 2018, the German accreditation system has been organised centrally. A major innovation facing the Accreditation Council, as the main decision-making body, is the task of deciding on the accreditation of courses of study (programme

accreditation) and the accreditation of quality management systems (system accreditation) on the basis of reviews. Conducting the peer-review procedures in programme and system accreditation remains in the hands of the accreditation agencies licensed to do so. Licensing of an agency takes place under the condition that it has been registered on EQAR by the Accreditation Council.

Accreditation Council

The Accreditation Council is the main decision-making body of the "Foundation for the Accreditation of Study Programmes in Germany". Tasks of the Accreditation Council include:

"The Accreditation Council decides on all matters of the Foundation. In particular, it accredits and reaccredits the study programmes and internal quality assurance systems at the German higher education institutions in accordance with Article 3 Section 5,…"

The members of the Accreditation Council are appointed by the KMK and the German Rectors' Conference for a period of four years. The Accreditation Council comprises:

1. eight higher education teachers from state or state-recognised higher education institutions in the Federal Republic of Germany, who have to represent at least the four subject groups of humanities, social sciences, natural sciences and engineering sciences,
2. a representative of the German Rectors' Conference,
3. four representatives or representatives of the länder in the Federal Republic of Germany,
4. five representatives from professional practice, of whom one is a representative of the state ministries responsible for labour and remuneration law,
5. two students,
6. two foreign representatives with experience of accreditation,
7. one representative of the agencies in an advisory capacity.

Foundation for the Accreditation of Study Programmes in Germany

The "Foundation for the Accreditation of Study Programmes in Germany" has the statutory mission to organise the quality assurance system for study programmes and teaching by accrediting study programmes.

The bodies of the Foundation are the Accreditation Council, the Board and the Foundation Council. The Foundation Council comprises 6 representatives from the federal states and 5 representatives of the German Rectors' Conference.

System accreditation

The established accreditation of Bachelor and Master study programmes is supplemented by the process of system accreditation. This involves inspecting quality assurance systems within the higher education systems in the field of study and teaching. The European standards and guidelines for quality assurance in Higher Education (ESG), the provisions of the Interstate Study Accreditation Treaty and the criteria from the Sample Decree pursuant to Art. 4 Section 1–4 of the Interstate Accreditation Treaty are applied in the accreditation process. Higher

education institutions can undergo system accreditation when they have a sufficient number of successfully completed accreditations for study programmes.

European Approach

During the course of efforts to internationalise German higher education institutions, it is becoming increasingly common to offer study programmes in cooperation with foreign higher education institutions. They are classified under the generic term of "joint programmes". The political and cultural disparities and the heterogeneity of the regulations between the countries involved has hitherto led to a high degree of complexity and above-average organisational effort in the procedure for the accreditation of joint programmes. Although it was previously possible to recognise foreign accreditations in Germany, a second agency accredited by the German Accreditation Council always had to be involved in order to examine the comparability of accreditation criteria and procedures and to ensure adherence to the common structural guidelines of the federal states. As part of the internationalisation strategy of Germany's federal and state governments, the accreditation outlay should be restricted by a joint procedure with one agency for the entire study programme.

Consequently, the European Approach for Quality Assurance of Joint Programmes was adopted at the Bologna Ministerial Conference in May 2015. It provides that every agency listed in the European Quality Assurance Register for Higher Education (EQAR) may conduct (peer-review) procedures for the accreditation of joint programmes and apply exclusively ESG-based quality benchmarks. This now ensures that no additional national criteria are applied.

The following agencies are authorised to conduct peer-review procedures:

- Accreditation, Certification and Quality Assurance Institute (ACQUIN),
- Accreditation Agency for Study Programmes in Health and Social Sciences (AHPGS),
- Agency for Quality Assurance and Accreditation of Canonical Study Programmes (AKAST),
- Agency for Quality Assurance and Accreditation Austria (AQ Austria),
- Austrian Agency for Quality Assurance (AQA),
- Agency for Quality Assurance by Accreditation of Study Programmes (AQAS),
- Accreditation Agency for Degree Programmes in Engineering, Informatics/ Computer Science, the Natural Sciences and Mathematics (ASIIN),
- evaluation agency Baden-Württemberg (evalag),
- Foundation for International Business Administration Accreditation (FIBAA),
- Swiss Center of Accreditation and Quality Assurance in Higher Education (OAQ),
- Central Evaluation- and Accreditation Agency Hannover (ZevA).

12.2 Accreditation of dual courses in the higher education sector

This section provides a compilation of requirements in abridged form for the accreditation of dual courses of study from the following documents:

- Beschluss des Akkreditierungsrates vom 10.12. 2010 [resolution by the Accreditation Council of 10 December 2010)],
- Recommendations of the German Council of Science and Humanities (WR) on the development of dual higher education study – policy paper 2013,
- Recommendations of the Board of the Federal Institute for Vocational Education and Training (BIBB) on dual higher education, resolution by the Board of the BIBB on 14 December 2016 in Bonn, policy document of the BIBB Board working group on dual higher education, resolution by the BIBB Board on 21 June 2017 in Bonn.

Summary of the recommendation for the accreditation of dual higher education courses

The Accreditation Council recommends that, without exception, all criteria and procedural regulations applicable to the accreditation of courses at higher education institutions should also be applied when considering dual courses of higher education (HAGWR: p. 3).

Dual courses of study are characterised by the utilisation of businesses and comparable establishments as a second learning venue in addition to the higher education institution and the distribution of the curriculum over at least two learning venues. Their content, time and organisational aspects are directed towards achieving a specific skill profile for the students via the connection of theoretical education with practical training (HAGWR: p.3).

At the same time, the course conception, its academic feasibility and the special requirements on transparency towards the public and in the accreditation assume a prominent role (HAGWR: p. 4)

12.2.1 Policy document of the BIBB Board working group on dual higher education. Resolution by the BIBB Board on 21 June 2017 in Bonn[4]

The following general principles are particularly important to the BIBB Board in the continuing development of accreditation for dual courses of study:

... in accord with the German Council of Science and Humanities, the BIBB Board recommends ...

- The higher education institution should define the qualification objectives against the background of the particular profile. In this process it is necessary to ensure the equivalence of the (dual) course with the qualification levels

4 Policy document of the BIBB Board working group on dual higher education. Resolution by the Board of the Federal Institute for Vocational Education and Training (BIBB) on 21 June 2017 in Bonn

and skill profiles defined in the qualifications framework for German higher education qualifications and to examine this aspect in the accreditation procedure.

- The higher education institution awarding the degree bears the final academic responsibility.
- So as not to jeopardise the mobility of the students, the overall ECTS totals for the individual tiers laid down in the qualifications framework for German higher education qualifications should be binding so that the number of ECTS points awarded for a Bachelor course is accordingly 180, 210 or 240. A Master course should conclude with 60, 90 or 120 ECTS points.
- Furthermore, the minimum periods of study specified in Article 19 of the German Framework Act for Higher Education have to be guaranteed, with a Bachelor covering at least three years and a Master course at least one year.
- Irrespective of the elevated practical components in the dual higher education courses, the higher education institution should guarantee the academic qualification of the students. This should be presented in the accreditation procedure.
- The higher education institution should describe the coordination of subject matter and organisational aspects in the theory and practice phases within a self-contained course concept from which the design of the practical phases and their allocation of credits is apparent. The course concept and the curriculum should describe a systematic linking of the study contents and learning venues as well as their time scheduling. In dual courses of study integrating work experience, the course concept and curriculum should serve as the basis for the planning of studies and student deployment within the enterprise. In the case of dual courses integrating an apprenticeship, an outline of timing and content or a company training plan should be available. In the accreditation, the higher education institution should provide proof of appropriate supervision of the students at both teaching and learning venues.
- Where enterprises are involved in the admission and selection of students in dual higher education courses, this should be documented in a suitable way and clearly explained in the accreditation.
- The status of the students in the event of their dropping out of the apprenticeship or the course of studies should be regulated and recorded within the accreditation procedure. Furthermore, it is also necessary to ensure that students are able to complete their studies even if changes occur unexpectedly in the cooperation between training enterprise and university.
- In the accreditation, the higher education institution should document systematic, suitable measures across the learning venues for securing the continuity and quality of the teaching programme on a permanent and sustainable basis.
- As a reviewer-focused procedure, the accreditation should be based on inspection of all areas relevant for the course of study (e.g. aspects relating to the subject and course structure as well as formal and social aspects). In composing the reviewer group for courses with special profile requirements attention should therefore be paid to ensuring that peers are familiar with the concrete, profile-specific requirements, conditions and issues.

- Appropriate consideration should be given to the learning venue of enterprise during the review (e.g. as part of the on-site inspection through involvement of the cooperating enterprises or – in the case of formats integrating an apprenticeship – by representatives of the chambers).
- The course concept with the training components of the curriculum based on theory and practice should be assessed against the background of the coordination of all training components in terms of organisation, subject matter and time scheduling. All course components/modules included within the course concept must be written down and allocated credit points.

The following quality dimensions are identified and briefly outlined in the following[5]

The BIBB Board designates the quality dimensions with particular regard to the design of the practice phases:

- Institutional/organisational interlinking and structuring of the learning venues,
- Interlinking of theory and practice,
- Contractual foundations,
- Quality assurance.

The BIBB Board lists specific requirements for all four dimensions which should be taken into account from the perspective of vocational education and training.

1. Institutional/organisational interlinking and structuring

The relationship of cooperation between the learning venues shall be reliably arranged; the relevant persons responsible and supervisors shall be clearly named and shall take part in regular exchanges. The practical partners as well as the students and other partners (e.g. vocational schools) shall be involved in the committees of the higher education institutions that are relevant for the dual courses of study.

It shall be ensured that appropriate personnel, technical and material resources are present at all learning venues. This shall include ensuring that the subject-related supervision and advice for the dual-system students are available at all learning venues, the respective supervisors are clearly named and that they have the necessary subject-related and pedagogical competencies.

2. Interlinking of theory and practice

Cooperation between venues inside and outside the higher education institution shall be based on the agreed course concepts. The theory and practice phases at the learning venues involved shall be connected with each other through the curriculum, i.e. they shall be related to each other in terms of content and coordinated in terms of time scheduling. These and the respective learning objectives shall also be clear from the module descriptions (of the higher education institution). All constituent parts of the study programme shall be allocated credit points (ECTS). The practice phases shall be documented in a suitable form. In the dual

5 Policy paper of the BIBB Board working group on dual higher education, resolution by the Board of the BIBB on 21 June in Bonn

courses of study, course concept and curriculum shall serve as the basis for the planning of studies and student deployment within the enterprise.

3. Contractual foundations

The rights and obligations of higher education institution and practical partners as well as those of any other cooperation partners shall be regulated by contract, generally in a cooperation agreement. The latter makes binding statements on the aspects of working together such as the following: rights and obligations of the participating partners, conditions and modalities of terminating the agreement, indication of the number of students to be expected and the participation in university committees. The higher education institution shall be responsible for the design and organisation of the course and carry the course out as agreed. The procedures for selecting the students within the dual system shall be agreed among the cooperation partners, as shall the selection criteria on which they are based.

An agreement shall also exist between the practical partner and the student within the dual system, with the form of the agreement being independent of the respective form of study. The following aspects are regulated within this agreement as a minimum: rights and obligations of the partners involved, remuneration, provision of the required training resources, regulations on release from employment, leave entitlement, working time, duration of contract, confidentiality clause, probationary period, termination of agreement, obligation to provide testimonial, regulation on any payment of tuition fees.

4. Quality assurance

The higher education institutions involved and the respective dual higher education courses shall regularly undergo procedures to obtain the Accreditation Council seal. The practical partners shall support the regular accreditation.

The higher education institution involved shall have a coordinated quality assurance and quality development concept for the dual higher education course, which shall apply across the learning venues and be equipped with the required tools. The breadth of subject matter within the training programme shall be assured and shall not be directed towards preparation for a specific occupation but towards possible fields of activity. Apart from the progress made in learning, the supervisory situation at the enterprise learning venue shall also undergo regular evaluation.

The BIBB Board reports that there are no legislatures "at national or federal state level that are decisively involved in the development of uniform regulatory instruments". The Accreditation Council, the German Council of Science and Humanities and the BIBB Board shall formulate recommendations for the development of the dual higher education programme.

"Dual higher education courses are generally part of higher education and are thus subject to university autonomy and the academic requirements of a higher education course. The nature of the organisational, subject-related, curricular and contractual connection of the learning venues is a matter of the course design, which is confirmed through accreditation."

12.3 Workshop description

Principles of accreditation and certification for a dual course of study at German higher education institutions Workshops are events in which small groups spend a limited amount of time dealing intensively with a topic. The emphasis here is on the communal work towards a shared objective. Facilitation refers to a method of controlling the communication within working groups, with the aim being to steer the group in a cooperative and communal manner towards a certain objective or outcome. The facilitation is intended to promote and motivate the active involvement of all participants. The objective is to produce a jointly developed outcome that is comprehensible to all those involved.

Venue: **Date:**

Introduction: Introduction of the facilitator, introduction of the participants, explanation of the topic or problem, presentation of the procedure (possibly a joint decision on an agenda including break times) and the resources.

Aim of the workshop: The aim of this workshop is to provide insight into the accreditation procedure at German/European higher education institutions. Special attention is given here to the recommendations/requirements of the Accreditation Council. Participants are intended to discuss and assess the individual recommendations/requirements and draw up a list of priorities with the aid of metaplan techniques. A further step including a discussion on difficult recommendations/requirements is to follow. At the same time, part of the workshop is to develop country-specific recommendations/requirements for an accreditation process.

Workshop schedule:
Working in small groups, discuss the document "12 Principles of accreditation and certification for a dual course of study at German higher education institutions".

- Form groups of three and discuss the document "12 Principles of accreditation and certification for a dual course of study at German higher education institutions".
- Discuss and assess the individual recommendations/requirements.
- Write down the individual recommendations/requirements in brief form on a card and fasten the cards to the pinboard.
- Award five white points each to the most important recommendations/requirements and form a list of priorities.
- Discuss and develop the country-specific recommendations/requirements for an accreditation process.
- Write down the individual recommendations/requirements in brief form on a card and fasten the cards to the pinboard.

Summary: Participants in the workshop give a brief presentation of their results (max. 10 minutes).

Documentation of the results: The results are to be documented in digital form, e.g. as text and photos.

Working resources: Pinboard, flipchart, flipchart paper, pens, metaplan cards, pins, PC and projector, screens and other media. The above should be available in sufficient quantity.

Figure 1 to 24 – Chapter 12

Fig. 1

Fig. 2

Fig. 3

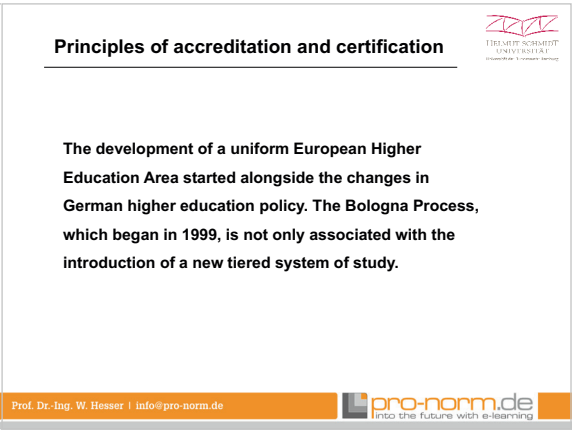


Fig. 4

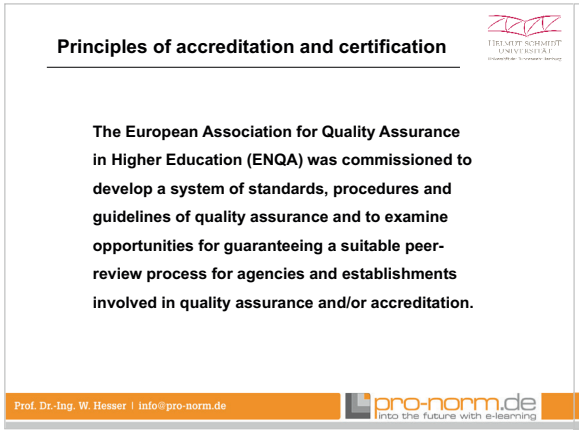


Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

Principles of accreditation and certification

- Agency for Quality Assurance by Accreditation of Study Programmes (AQAS)
- Accreditation Agency for Degree Programmes in Engineering, Informatics/Computer Science, the Natural Sciences and Mathematics (ASIIN)
- evaluation agency Baden-Württemberg (evalag)
- Foundation for International Business Administration Accreditation (FIBAA)
- Swiss Center of Accreditation and Quality Assurance in Higher Education (OAQ)
- Central Evaluation- and Accreditation Agency Hannover (ZevA)

Fig. 13

Principles of accreditation and certification

The Accreditation Council recommends that, without exception, all criteria and procedural regulations applicable to the accreditation of courses at higher education institutions **should also be applied when considering dual courses of higher education (HAGWR: p. 3).**

Fig. 14

Principles of accreditation and certification

The higher education institution should define the qualification objectives against the background of the particular profile. In this process it is necessary to ensure the equivalence of the (dual) course with the qualification levels and skill profiles defined in the qualifications framework for German higher education qualifications and to examine this aspect in the accreditation procedure.
The higher education institution awarding the degree bears the final academic responsibility.

Fig. 15

Principles of accreditation and certification

The overall ECTS totals for the individual tiers laid down in the qualifications framework for German higher education qualifications should be binding so that the number of ECTS points awarded for a Bachelor course is accordingly 180, 210 or 240.
A Master course should conclude with 60, 90 or 120 ECTS points.

Fig. 16

Principles of accreditation and certification

Furthermore, the minimum periods of study specified in Article 19 of the German Framework Act for Higher Education have to be guaranteed, with a Bachelor covering at least three years and a Master course at least one year.

Fig. 17

Principles of accreditation and certification

Irrespective of the elevated practical components in the dual higher education courses, the higher education institution should guarantee the academic qualification of the students.
This should be presented in the accreditation procedure.

Fig. 18

Principles of accreditation and certification

The higher education institution should describe the coordination of subject matter and organisational aspects in the theory and practice phases within a self-contained course concept from which the design of the practical phases and their allocation of credits is apparent.
The course concept and the curriculum should describe a systematic linking of the study contents and learning venues as well as their time scheduling.

Fig. 19

Principles of accreditation and certification

In the accreditation, the higher education institution should provide proof of appropriate supervision of the students at both teaching and learning venues.

Where enterprises are involved in the admission and selection of students in dual higher education courses, this should be documented in a suitable way and clearly explained in the accreditation.

Fig. 20

Principles of accreditation and certification

In the accreditation, the higher education institution should document systematic, suitable measures across the learning venues for securing the continuity and quality of the teaching programme on a permanent and sustainable basis.

Fig. 21

Principles of accreditation and certification

As a reviewer-focused procedure, the accreditation should be based on inspection of all areas relevant for the course of study (e.g. aspects relating to the subject and course structure as well as formal and social aspects).

Appropriate consideration should be given to the learning venue of enterprise during the review (e.g. as part of the on-site inspection through involvement of the cooperating enterprises.

Fig. 22

Principles of accreditation and certification

The BIBB Board designates the quality dimensions with particular regard to the design of the practice phases:

- Institutional/organisational interlinking and structuring of the learning venues
- Interlinking of theory and practice
- Contractual foundations
- Quality assurance

Fig. 23

Principles of accreditation and certification

ACQUIN Guidelines for programme accreditation procedures, page 4

The following elements are considered as quality-relevant for the study programmes:

- the study programme has clearly defined and valid objectives.
- the concept of the study programme enables the (intended) realisation of the objectives.
- the necessary organisational and resource-related requirements are met.
- the concept is implemented accordingly.
- using recognised evaluation methods, the Hei periodically checks whether the objectives of the study programme are successfully reached and if the study programme needs modification. consequently the Higher education institution (Hei) improves the programme if necessary. The guidelines, which comply with the standards and Guidelines for Quality assurance in the european "Higher education area" (esG), can be applied in both national and international evaluation procedures.

Fig. 24

13 European academic higher education – Bologna declaration

13.1 Overview of the Bologna Process, What is the Bologna Process?

The Bologna Process is a process of cooperation and reform in the field of higher education bringing together 48 countries. It established and seeks to consolidate the European Higher Education Area (EHEA) with comparable and compatible systems of higher education in order to facilitate mobility, increase employability, allow equitable student access and progression and strengthen Europe's attractiveness and competiveness worldwide.

How is the Bologna Process structured?

The Bologna Process was launched in 1999 by Ministers responsible for Education from 29 European countries. Since then, Ministerial Conferences have been organised every two years to monitor the progress on implementing the agreed reforms and set future priority areas. At the Ministerial Summit held in Budapest/Vienna in 2010, the European Higher Education Area was launched. To date, it brings together 48 out of the 49 countries that have ratified the European Cultural Convention of the Council of Europe and are eligible to form part of the European Higher Education Area.

The priority areas identified in the Declarations and Communiqués issued at each Ministerial Summit determine the work plan between one Ministerial Summit and the next one. These priority areas are dealt with by working groups made up of countries expressing an interest in that particular area. Cooperation on higher education in the Bologna Process is also supported through regular meetings of representatives from all countries forming part of the European Higher Education Area at the so-called Bologna Follow-up Group (BFUG), which discusses and decides on the work carried out by the working groups. The work of this group is reinforced by the Bologna Secretariat, which is established and supported by the country organising the next Bologna Ministerial Summit.

Who is involved?

The main actors in the Bologna Process are the representatives of the 48 member countries that signed the Bologna Declaration as well as representatives of European universities (EUA), professional higher education institutions (EURASHE), students (ESU), quality assurance agencies (ENQA), the United Nations Educational, Scientific and Cultural Organisation – European Centre for Higher Education (UNESCO-CEPES), Education International (EI) and Business Europe. The Process is also supported by the European Commission and the Council of Europe.

What are the main priority areas?

The Bologna Process Declarations and Communiqués contain both structural or systemic reforms and more general policy dimensions.

Structural or systemic reforms

Diploma supplement: The Diploma Supplement is a document issued to each graduate in addition to the qualification and describes the education system of the country, the education institution attended, the programme followed along with the main areas studied as part of the programme.

ECTS: The European Credit Transfer and Accumulation System is based on the student workload and learning outcomes of a programme. It aims at facilitating mobility through credit transfer across institutions and countries.

Degree structure: Countries agreed to establish a common three-tiered degree structure of Bachelor (first cycle), Master (second cycle) and Doctorate (third cycle) with the possibility of a short cycle qualification forming part of the first cycle.

Qualifications framework: Besides a common degree structure, countries committed themselves to establish National Qualifications Frameworks. These explain qualifications in an education system in terms of level descriptors based on the knowledge skills and competences obtained upon completion. Moreover, they provide information on the level of qualifications and on the transition between them to allow for flexible learning pathways and to facilitate recognition of qualifications.

Quality Assurance: Cooperation on quality assurance in higher education at European level is aimed at developing common criteria and methodologies that will promote mutual trust and facilitate recognition of qualifications.

General policy dimensions

European dimension of higher education: The Bologna Process seeks to increase the transparency and attractiveness of European Higher Education Area globally to attract the most talented students to Europe.

Mobility: At the same time, the Bologna Process aims at promoting the mobility of students, academics and administrative staff within the European Higher Education Area. Student mobility is supported both for a short-term (e.g. a semester) as well as for a whole degree.

Employability: The Bologna Process aims at providing students with the knowledge, skills and competences required for the labour market. By being more responsive to the labour market needs, education can help avoid graduate unemployment and contribute to economic growth.

Social dimension: Members of the Bologna process have agreed that the student population in higher education should reflect the diversity of the total population. Thus, any obstacles to enter, participate in or complete higher education linked to socio-economic background, gender, age, nationality, religion or any other factor should be progressively removed.

Lifelong learning: Lifelong learning may contribute to meeting the needs of a changing labour market. Through flexible learning pathways and a smooth transition between education and work, lifelong learning can ensure continuous opportunities for developing knowledge, skills and competences. At the same time, it may provide more flexible access to higher education for underrepresented groups.

13.2 Comment on the dual system of study within the European higher education area

The dual system of study in Germany is embedded in two European processes of restructuring for education. Whereas the frequently mentioned Bologna process addresses the higher education system, the Copenhagen process is aimed at modernising the systems of vocational education and training.

One consequence of the Copenhagen process was the idea of the European Qualifications Framework for lifelong learning (EQF), which may be seen as a qualifications system "that compares the learning outcomes of vocational education with those of higher education and makes the competencies, qualifications or certificates acquired transparent for the European and international labour market".[1] At present, the EQF takes no account of the additional specialist professional qualification of graduates from dual courses of study but instead classifies students from the dual system according to their Bachelor qualification. On the other hand, this also means that the Bachelor qualification in the dual system of study should actually be equivalent to that from a regular full-time course at a university and therefore entitle the holder to enrol on a Master's course. One of the obstacles in this context arises from the ECTS or required credit points. "The credit points are intended to reflect the students' workload during the course. This means that when planning their curricula, higher education establishments and colleges of advanced vocational studies now have to pay much greater attention to whether the students can in fact meet the requirements."[2] If reasons of potential overtaxing or concerns regarding the feasibility of study (cf. Accreditation Council 2010) mean that fewer credit points are planned into the module manual – despite the resolution by the Standing Conference of the Ministers of the Federal States of 2004 to consider Bachelor qualifications from accredited colleges of advance vocational studies as officially equivalent to those from higher education establishments – difficulties in recognition may occur. An insufficient total of credit points or a lack of proof of specific qualification features does in fact make enrolment in a Master's course difficult or even formally exclude the option. The accreditation report of the Baden-Wuerttemberg Cooperative State University (DHBW), for example, therefore notes that graduates from the dual system are "capable of proceeding to application-oriented Master courses in continuing education."[3]. However, the profile of many universities that offer Master courses is markedly research-oriented, which is why certain aspects within the dual system of study do not meet the requirements of universities. In the technical subjects, for instance, the scope of the mathematical education at a cooperative state university is only roughly 50% of that taught at a university, which is why applicants with a Bachelor qualification from the dual system are only admitted to a Master's course under certain conditions[4].

1 Ratermann and Mill 2015: 97
2 Ratermann and Mill 2015: 101
3 ZEvA 2011: 9
4 Hesser, Wilfried; Langfeldt, Bettina: Das duale Studium aus Sicht der Studierenden. "The dual-mode course of study from the students' viewpoint". Helmut Schmidt University. University Library of Helmut Schmidt University, HSU (ISBN 978-3-940385-97-0)

https://ncfhe.gov.mt/en/Documents/Projects/Promoting%20the%20Bologna%20Process%20in%20Malta/Infosheet%20Overview%20of%20the%20Bologna%20Process.pdf; Valid as of 2017
http://ec.europa.eu/education/policy/higher-education/bologna-process_de; Stand 2017 http://eacea.ec.europa.eu/Education/eurydice/documents/thematic_reports/182EN.pdf; Valid as of 2017

Figure 1 to 18 – Kapitel 13

Fig. 1

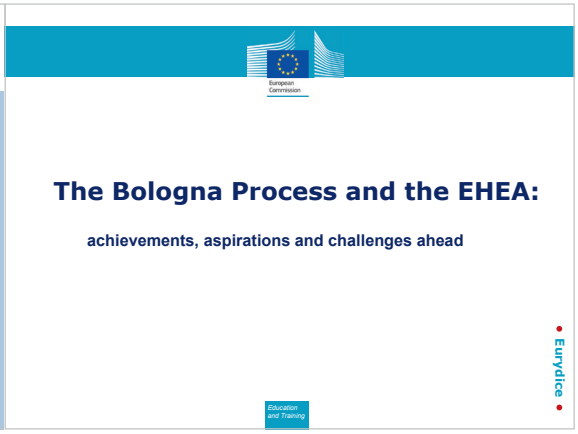


Fig. 2

Fig. 3

Fig. 4

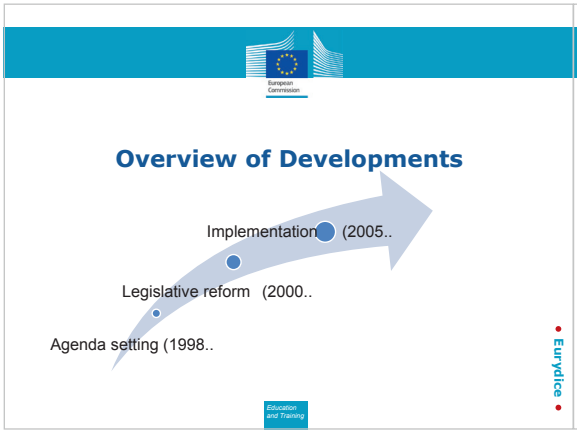


Fig. 5

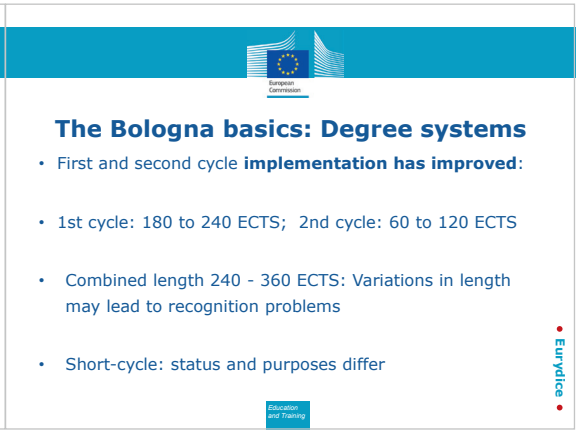
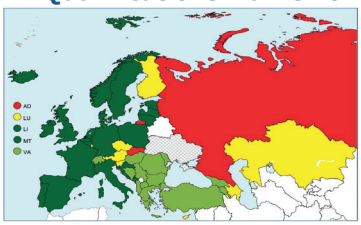


Fig. 6

Qualifications frameworks



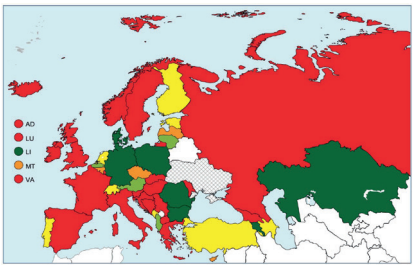
	2015 Report	2012 Report
	24	10
	14	13
	7	18
	0	2
	3	4

38 countries in 'green zone', but 10 others have not started implementation at institutional and programme level, and some show no progress since 2012.

Education and Training

Fig. 7

Openness to cross border QA



	2015 Report
	8
	4
	8
	5
	23

Eurydice

Education and Training

Fig. 8

Recognition of qualifications and credits

- All but one EHEA countries have ratified the LRC
- (Only) 10 countries specify the main principles in legislation
- HEIs make most decisions upon recognition of qualifications and all decisions on credits gained abroad
- Revised ESG includes duty of QA to monitor recognition
- Pathfinder group has demonstrated that automatic level recognition can be achieved with political commitment

Education and Training

Fig. 9

Quality Assurance

- Dynamic evolution continues... However:
- Participation of stakeholders sometimes still problematic
- lack of attention to social dimension
- Slow progress in allowing EQAR-registered agencies to work across EHEA
- Challenge of European approach to joint programmes

Eurydice

Education and Training

10

Fig.10

Lifelong Learning

- A necessity, not an add-on luxury: because of changing economic, demographic and social environment
- In 2/3 of countries, less than 6% of adults with higher education obtained a qualification over the age of 30
- Adult needs not sufficiently addressed in system planning
- Many systems have work to do on access, RPL, flexible learning paths

Education and Training

Fig. 11

Outcomes and Employability

- Not the same reality everywhere
- Non completion rates worryingly high (3 out of 10 fail to finish a programme they start)
- Graduate jobs have been hit by crisis, although graduates are still better off than lesser educated in 2/3 countries
- Measures such as labour market forecasting under-developed
- Employability of disadvantaged students/graduates ignored

Education and Training

Fig. 12

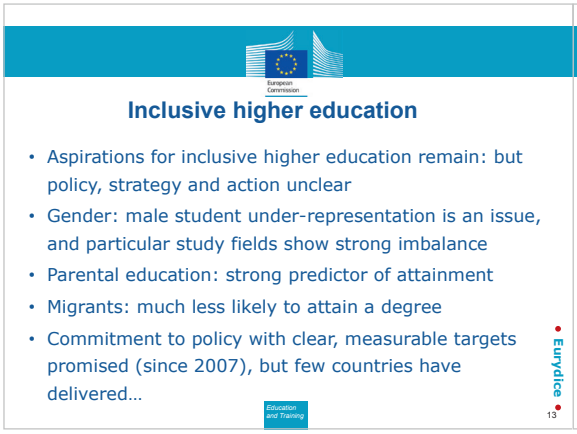


Fig. 13

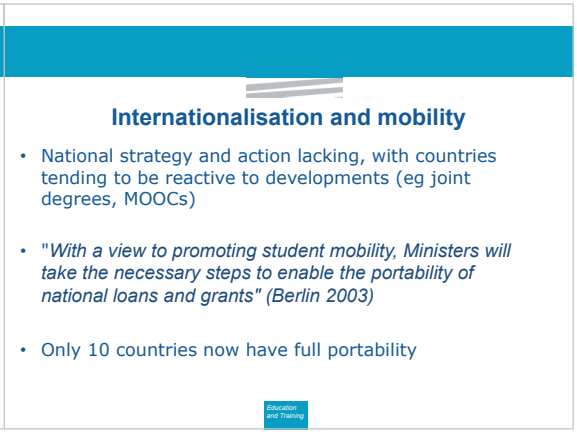


Fig. 14

Fig. 15

Fig. 16

Fig. 17

Fig. 18

14 Funding institutions in Germany and Europe

14.1 Funding institutions in Germany

The experience of recent years has shown that at the end of a guidance session there is often a question raised about financial support.

This question is to be answered in different ways since different interests and objectives are always associated with this question.

These might be:

- Contacting foreign cooperation partners (per the DAC list)[1].
- College/university partnership schemes or
- Project cooperation arrangements.

Firstly, it is important that we specify that in the DAAD (German Academic Exchange Service) schemes for project funding, as a rule only state and state-recognised German colleges and universities are eligible to apply.

However, it is the scheme invitations that are definitive:

Thus for instance there are schemes in which, besides the state and state-recognised German colleges and universities there are other institutions entitled to apply:

- Non-university research institutes (e.g. PPP schemes, specialist partnerships with colleges and universities in developing countries, transformation: research partnerships).
- German NGOs that run development cooperation schemes (e.g. training and evaluation sessions for technical and management staff for developing and emerging countries).
- Preparatory colleges or comparable institutions (e.g.: integration of refugees into specialist studies).
- Foreign colleges and universities (e.g. study trips for groups of foreign students in Germany, DIES (Dialogue on Innovative Higher Education Strategies) training course in university management).

Access to German colleges and universities was described by the partners on several occasions as difficult. Upon checking this statement, it was noted that the great majority of German colleges and universities with dual study courses made little reference via English-language websites to what they offered. On the universities' or colleges' websites, the advertisements for dual study courses are often located at a third level down or even deeper and they have only been provided in German.

1 www.bmz.de/de/ministerium/zahlen_fakten/oda/hintergrund/dac_laenderliste/index.html

DHBW[2] and THM[3] are universities that provide English websites.

So there is a barrier to access that is difficult for potential foreign cooperation partners to overcome.[4]

The BMZ (Federal Ministry of Economic Cooperation and Development, the BMBF (Federal Ministry of Education and Research), german economy, the DAAD and others advertise dual college or university vocational training on various websites on the internet to foreign colleges and universities. These activities cannot be described as effective. It is recommended that a cooperation network be set up of colleges and universities (universities of applied sciences) with dual study courses or dual colleges, represented by a coordination office in the DAAD, which interested foreign colleges and universities in particular may contact.

The following summary of DAAD (exchange) schemes was put together with the kind support of DAAD employees.

German Academic Exchange Service (DAAD)
Fact Finding Missions

he Fact Finding Missions programme helps German university lecturers to meet potential cooperation partners in DAC countries. The aim is to use preparatory visits to set up long-term collaboration.

In order to establish contacts, provide incentives for consolidating and broadening networks, and support the creation of long-lasting partnerships, the DAAD's Fact Finding Missions programme sponsors preparatory visits by delegations of experts from German higher education institutions, which allow them to make contact with potential cooperation partners in DAC countries. Visits to one or more universities and discussions with other institutions (embassies, ministries, DAAD regional offices, development cooperation organisations, etc.) help determine the needs of partner institutions and an application for a BMZ-funded partnership programme can then be prepared. The visit by the German delegation may be followed by visits of the foreign partners to Germany as this allows for more intensive preparations for the cooperation project and clarification of the partner structure.

Referat Partnerschaftsprogramme und Hochschulmanagement in der Entwicklungszusammenarbeit/P32
Contact:
Anke Maria Meyer, ☎ +49 228 882-486, Email: a.meyer@daad.de
🌍 www.daad.de/der-daad/unsere-aufgaben/entwicklungszusammenarbeit/foerderprogramme/hochschulen/infos/de/44483-fact-finding-missions/

International academic networks
Subject-Related Partnerships with Institutions of Higher Education in Developing Countries

Subject-Related Partnerships with Institutions of Higher Education in Developing Countries

2 www.dhbw.de/english/home.html
3 www.thm.de/site/en/
4 Wissenschaftsrat (Research Council) 2013 S38

By sponsoring curriculum enhancement of partner universities abroad, this programme contributes to creating high-quality, effective, and cosmopolitan higher education institutions in developing countries and in Germany.
Contact:
Berno Birker, ☎ +49 228 882-8671, Email: birker@daad.de
Claudia Geratz, ☎ +49 228 882-145, Email: geratz@daad.de
🌍 www.daad.de/der-daad/unsere-aufgaben/entwicklungszusammenarbeit/foerderprogramme/hochschulen/en/

Integrated international study courses with double degrees

🌍 www.daad.de/hochschulen/programme-weltweit/studiengaenge/de/23193-integrierte-internationale-studiengaenge-mit-doppelabschluss

The aim of this scheme is to develop and/or to establish an integrated international double degree study course with one or more foreign partner colleges or universities. With these courses it is intended to make a permanent contribution to the setup and expansion of international structures at German colleges and universities and to strengthening the exchange of teaching staff and students.

Central to this support are the internationalisation of German colleges and universities and the mobility of German students.
Contact:
Almut Lemke, ☎ +49 228 882-457, Email: lemke@daad.de

University-Business-Partnerships between Higher Education Institutions and Business Partners in Germany and in Developing Countries

🌍 www.daad.de/der-daad/unsere-aufgaben/entwicklungszusammenarbeit/foerderprogramme/hochschulen/infos/de/44507-praxispartnerschaften-zwischen-hochschulen-und-unternehmen-in-deutschland-und-in-entwicklungslaendern/

Offered since 2012, the University-Business-Partnerships programme is open to all disciplines and based on the successful format of subject-related university partnerships with developing countries. The direct cooperation between partners from industry and higher education institutions constitutes a new and practice-oriented funding approach aimed at improving the quality of university programmes in developing countries by involving German and local industry so that the needs of the local and regional labour market are met.The aim is to support the transfer of knowledge between universities and industry so that graduates are better suited to the needs and developments of the labour market. Funded University-Business-Partnerships are expected to lead to viable cooperation structures between participating institutions and partners in industry.

On the German side, the participating higher education institutions are also expected to expand their expertise in development cooperation.
Contact:
Anke Maria Meyer, ☎ +49 228 882-486, Email: a.meyer@daad.de

VW-Stiftung

The Volkswagen Foundation is an independent, non-profit organization and has been funding research projects in all disciplines since 1962. Within the framework

of changing funding initiatives, the foundation provides impetus for the development of research and higher education.
🌍 www.volkswagenstiftung.de/en.html
Contact:
VolkswagenStiftung
Kastanienallee 35
30519 Hannover
☎ +49 511 8381-0
Dr. Anika Haverig, Förderreferentin, ☎ +49 511 8381-237,
Email: haverig@volkswagenstiftung.de

GIZ Contact representatives in the capital of your country

As a provider of international cooperation services for sustainable development, we are dedicated to building a future worth living in around 120 countries worldwide. GIZ's extensive expertise is in demand around the globe.
The **GIZ** (German Association for International Cooperation) works for the Federal Government and other clients exclusively on an order basis and does not provide any funding.

iMOVE is an initiative of the German Federal Ministry of Education and Research (BMBF). iMOVE is part of the Federal Institute for Vocational Education and Training (BIBB) in the Federal City of Bonn.
🌍 www.imove-germany.de/cps/rde/xchg/imove_projekt_international/hs.xsl/contact.htm
🌍 www.imove-germany.de/cps/rde/xchg/imove_projekt_international/hs.xsl/how_to_find_us.htm

Federal Institute for Vocational Education and Training (BIBB)
iMOVE: Training – Made in Germany

Robert-Schuman-Platz 3, 53175 Bonn, Germany
☎ +49 228 107-1745
🖷 +49 228 107-2895

PTB Physikalisch-Technische Bundesanstalt

🌍 www.ptb.de/cms/en/ptb/fachabteilungen/abtq/fb-q5.html
The Technical Cooperation department supports developing and emerging countries in the task of developing and applying an internationally recognized quality infrastructure that has been tailored to suit the countries' needs.

Technical Cooperation Department Q.5
Head of Department
Dr. Marion Stoldt, ☎ +49 531 592-8200, Email: marion.stoldt@ptb.de
Physikalisch-Technische Bundesanstalt
Fachbereich Q.5
Bundesallee 100
38116 Braunschweig

The **PTB** works for the Federal Government and other clients exclusively on an order basis and does not provide any funding.

Senior Experten Service (SES)

As the Foundation of German Industry for International Cooperation, the SES works all around the world. Most of its voluntary assignments are completed in developing and emerging countries or in Germany.
Stiftung der Deutschen Wirtschaft für internationale Zusammenarbeit GmbH
Gemeinnützige Gesellschaft
☎ +49 228 26090-0, 🖷 +49 228 26090-77, Email: ses@ses-bonn.de
🌍 www.ses-bonn.de/en/contact/contact-form.html

An alternative would be to make direct contact via the Embassy in Berlin

Federal Ministry for Economic Cooperation and Development
Referat: 303 Bildung und digitale Welt
Stresemannstr. 92
10963 Berlin
☎ +49-30-18535-0, Email: RL303@BMZ.Bund.de

Federal Ministry of Education and Research
Referat: 2 Europäische und internationale Zusammenarbeit
in Bildung und Forschung
Kapelle-Ufer 1
11055 Berlin
☎ +49 (0)228 / 99 57-0, E-Mail: information@bmbf.bund.de

Federal Ministry for Economic Affairs and Energie (BMWI)
Referat: VIIB5 Fachkräfte, Qualifizierung von Flüchtlingen, Digitale Bildung
Scharnhorststraße 34-37
10115 Berlin
☎ 03018 615-0, Email: Buero-VIIB5@bmwi.bund.de

14.2 Funding institutions in Europe

Erasmus + schemes for Capacity Building in the field of Higher Education

🌍 eacea.ec.europa.eu/erasmus-plus/funding/capacity-building-higher-education-2018_en

Within the context of the "Erasmus + Capacity Building in Higher Education" Erasmus scheme, the EU Commission is funding a dual studies scheme in Africa (South Africa and Mozambique) for the next three years from Feb. 2017 to Feb. 2020.

Project coordinator: Donau University Krems, Austria
Project partners: 15 partners; Austria, Germany, Finland, Mozambique and South Africa
Co-funded by ERASMUS + Programme of the European Union
Project Lead Research: Raimund Hudak, ☏ +49(0)71311237-160,
Email: raimund.hudak@heilbronn.dhbw.de

Erasmus+ Programme
Capacity Building in the field of Higher Education

Capacity-Building Projects are transnational cooperation projects based on **multilateral partnerships** primarily between **higher education** institutions (HEIs) from Programme and more than 150 eligible Partner Countries. The **33 Programme Countries** contributing financially to ERASMUS+ are the EU Member States + Turkey, Iceland, Liechtenstein, Norway, Former Yugoslav Republic of Macedonia.

Capacity-Building Projects are **aimed** at using HEI as a vector **to deliver the knowledge requirements for economic development** through job creation, better governance, increased entrepreneurship and mobility, and a stronger civil society. Enhancing **management, governance and innovation capacities**, and the **internationalisation** of HEIs as well as **modernising education systems** is one of the expected impacts of the programme together with regional and cross regional cooperation.

There are two types of projects aiming to impact the higher education institutions **(Joint Projects)** and/or education systems **(Structural Projects)**. Furthermore for a limited number of successful projects there is also funding foreseen for a specific mobility strand.

The project proposals must clearly address the national/regional priorities defined for the Partner Countries (see on the EACEA website: http://eacea.ec.europa.eu/erasmus-plus/funding/key-action-2-capacity-building-in-field-higher-education-2015_en).

I. How and what do I submit?

Before starting your application:

1. Applicants must have an ECAS (European Commission Authentication Service) account. If you already have an ECAS account, you may use this, if not, create an ECAS account.

You are now ready to start the application process:

2. Each organisation involved in your project must register in the Participants' portal and receive a Participant Identification Code (PIC). The PIC will be requested in the application form. To access the Participants' portal, you will need your ECAS username and password.

Given that each applicant organisation should use only one PIC code, please first check with your legal representative's office whether such a PIC number has already been created for your organisation. If this is the case, you may use this PIC code to create your electronic application form.

3. Create your **official electronic application form**, also called the **eForm**. Use the official application package and the correct application form for the **Capacity Building in the Field of Higher Education** programme action.

4. Fill in the **eForm**. Do not forget also to **complete and attach** to the eForm **the four (3) mandatory annexes**

   eForm: project data – parts A, B, C

   + **compulsory** annexes:
   - ✓ **Detailed project description** (Word doc) – parts D, E, F, G, H, I, J
   - ✓ **Budget tables** (Excel doc)
   - ✓ **Declaration of Honour+ Mandates** (in one single PDF doc)

5. Once you have completed the eForm and attached the annexes, **validate the eForm**. This triggers an automatic check that informs you if your application package is complete. If this is the case, you can **submit it online.**

6. When you have submitted your application online, the applicant organisation should receive a **confirmation email and reference number**.

II. Application form - structure & contents

eForm (PDF Adobe document)

A. Identification of the applicant and other partners
B. Description of the project (summary information)
C. Specific information related to CBHE

1. Detailed project description (Word doc. Attached to eForm)

D. Quality of the project team and the cooperation arrangements
E. Project characteristics and relevance
F. Quality of the project design and implementation
G. Impact, dissemination and exploitation, sustainability; LFM; Workplan
H. Work packages
I. Special Mobility Strand (where applicable)
J. Other EU Grants

2. Budget tables (Excel doc)

3. Declaration of Honour+ Mandates (in one single PDF doc)

Applicants have to submit their grant application **on-line** to EACEA by **10 February at 12:00 (midday Brussels time)** for projects starting on 15 October of the same year.

15 Cooperative state universities and higher education institutions with dual courses of study

On the basis of our own experience in finding higher education institutions with dual courses of study and cooperative state universities on the Internet, we offer you a list here of the higher education institutions offering dual courses sorted by federal state and subject group as well as area of study.

15.1 List of cooperative state universities and higher education institutions with dual courses of study listed by German federal state

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Baden-Württemberg	60115200	H Esslingen in Göppingen (FH)	35
Baden-Württemberg	60142050	Duale Hochschule Baden-Württemberg Mosbach, Campus Bad Mergentheim	534
Baden-Württemberg	60142100	Duale Hochschule Baden-Württemberg Ravensburg, Campus Friedrichshafen	1 260
Baden-Württemberg	60142150	Duale Hochschule Baden-Württemberg Heidenheim	2 419
Baden-Württemberg	60142170	Duale Hochschule Baden-Württemberg Heilbronn	1 178
Baden-Württemberg	60142171	Duale Hochschule Baden-Württemberg CAS, Heilbronn	759
Baden-Württemberg	60142200	Duale Hochschule Baden-Württemberg Stuttgart, Campus Horb	926
Baden-Württemberg	60142250	Duale Hochschule Baden-Württemberg Karlsruhe	3 097

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Baden-Württemberg	60142300	Duale Hochschule Baden-Württemberg Lörrach	2 088
Baden-Württemberg	60142350	Duale Hochschule Baden-Württemberg Mannheim	6 402
Baden-Württemberg	60142400	Duale Hochschule Baden-Württemberg Mosbach	3 132
Baden-Württemberg	60142450	Duale Hochschule Baden-Württemberg Ravensburg	2 483
Baden-Württemberg	60142501	Duale Hochschule Baden-Württemberg Stuttgart	7 448
Baden-Württemberg	60142550	Duale Hochschule Baden-Württemberg Villingen-Schwenningen	2 513
Baden-Württemberg	60171000	SRH Hochschule Heidelberg (priv. FH)	5
Baden-Württemberg	70110000	Hochschule Ludwigsburg für öffentliche Verwaltung und Finanzen	1
Baden-Württemberg	**~~~~~~~~**	**total**	**34 280**
Bayern	10225100	U Erlangen-Nürnberg in Erlangen	25
Bayern	10225200	U Erlangen-Nürnberg in Nürnberg	248
Bayern	10240002	U der Bundeswehr München (FB Fachhochschul-studiengänge)	50
Bayern	10260000	U Würzburg	63
Bayern	60203100	Ostbayerische Technische Hochschule Amberg-Weiden (FH) in Amberg	148
Bayern	60203200	Ostbayerische Technische Hochschule Amberg-Weiden (FH) in Weiden	59

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Bayern	60210000	FH Aschaffenburg	107
Bayern	60213000	FH Augsburg	182
Bayern	60215000	FH Coburg	146
Bayern	60220000	Technische Hochschule Deggendorf (FH)	532
Bayern	60225100	FH Hof in Hof	338
Bayern	60225200	FH Hof in Münchberg	12
Bayern	60228000	Technische Hochschule Ingolstadt (FH)	611
Bayern	60231000	FH Kempten	232
Bayern	60234000	FH Landshut	128
Bayern	60238000	FH München	786
Bayern	60241000	FH Neu-Ulm	74
Bayern	60244000	Technische Hochschule Nürnberg Georg Simon Ohm (FH)	828
Bayern	60247000	Ostbayerische Technische Hochschule Regensburg (FH)	512
Bayern	60250000	FH Rosenheim	554
Bayern	60253100	Hochschule Weihenstephan-Triesdorf (FH) in Triesdorf	112
Bayern	60253200	Hochschule Weihenstephan-Triesdorf (FH) in Weihenstephan	206
Bayern	60257100	FH Würzburg-Schweinfurt in Schweinfurt	152
Bayern	60257200	FH Würzburg-Schweinfurt in Würzburg	88
Bayern	60262000	Hochschule Fresenius Idstein in München (priv. FH)	68
Bayern	60272000	Evang. Hochschule Nürnberg (FH)	408

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Bayern	60275200	Kath. Stiftungs FH München in München	249
Bayern	~~~~~~~~	**total**	**6 918**
Berlin	10340000	Steinbeis-H Berlin (priv. H)	6 920
Berlin	60305000	ASH für Sozialarbeit und Sozialpädagogik Berlin	2
Berlin	60310000	Beuth-HS für Technik Berlin	508
Berlin	60320002	HWR Berlin, Fachbereich Duales Studium	2 093
Berlin	60335000	bbw Hochschule Berlin (priv. FH)	80
Berlin	60347000	IB-Hochschule Berlin (priv. FH)	136
Berlin	60349000	HS für Medien, Kommunikation und Wirtschaft Berlin in Berlin (priv. FH)	160
Berlin	60361000	Hfür angewandte Pädagogik Berlin (priv. FH)	87
Berlin	60363000	H für Wirtschaft, Technik und Kultur Berlin in Berlin (priv. FH)	195
Berlin	60370000	Evangelische Hochschule Berlin (FH)	203
Berlin	~~~~~~~~	**total**	**10 384**
Brandenburg	10407200	Brandenburgische TU Cottbus-Senftenberg in Senftenberg	243
Brandenburg	60405000	Technische Hochschule Brandenburg (FH)	44
Brandenburg	60422000	Fachhochschule für Sport und Management Potsdam (priv.)	194

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Brandenburg	60425000	Technische Hochschule Wildau	191
Brandenburg	60435000	Fachhochschule Clara Hoffbauer Potsdam (priv. FH)	128
Brandenburg	~~~~~~~~	**total**	**800**
Bremen	60520000	Hochschule für Internationale Wirtschaft und Logistik (HIWL) Bremen (priv. FH)	121
Bremen	~~~~~~~~	**total**	**121**
Hamburg	60645000	Hochschule Fresenius Idstein in Hamburg (priv. FH)	59
Hamburg	60650000	MSH Medical School Hamburg (priv. FH)	133
Hamburg	~~~~~~~~	**total**	**192**
Hessen	10725101	U Kassel in Kassel (ohne Kunsthochschule)	194
Hessen	10725200	U Kassel in Witzenhausen	34
Hessen	10740100	EBS U für Wirtschaft und Recht in Oestrich-Winkel (priv.)	11
Hessen	60705100	h_da - H Darmstadt in Darmstadt (FH)	370
Hessen	60710000	Frankfurt University of Applied Sciences (FH)	259
Hessen	60715000	FH Fulda	606
Hessen	60720300	Technische Hochschule Mittelhessen (THM) in Wetzlar (FH)	1 253
Hessen	60725200	Hochschule Rhein-Main (FH) in Rüsselsheim	249
Hessen	60725300	Hochschule Rhein-Main (FH) in Wiesbaden	56

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Hessen	60728000	Hochschule Geisenheim University (FH)	23
Hessen	60735000	accadis Hochschule Bad Homburg (priv. FH)	103
Hessen	60745000	Provadis School of Intern. Management and Technology, Frankfurt a.M. (priv. FH)	805
Hessen	60750200	Hochschule Fresenius Idstein in Frankfurt (priv. FH)	60
Hessen	**~~~~~~~~**	**total**	**4 023**
Mecklenburg-Vorpommern	60805000	Hochschule Neubrandenburg (FH)	17
Mecklenburg-Vorpommern	60810000	Hochschule Stralsund (FH)	8
Mecklenburg-Vorpommern	60815000	Hochschule Wismar (FH)	90
Mecklenburg-Vorpommern	**~~~~~~~~**	**total**	**115**
Niedersachsen	60905200	Hochschule Braunschweig-Wolfenbüttel in Salzgitter (FH)	111
Niedersachsen	60905300	Hochschule Braunschweig-Wolfenbüttel in Wolfenbüttel (FH)	847
Niedersachsen	60905400	Hochschule Braunschweig-Wolfenbüttel in Wolfsburg (FH)	321
Niedersachsen	60905500	Hochschule Braunschweig-Wolfenbüttel in Suderburg (FH)	25
Niedersachsen	60910100	Hochschule Hannover (FH)	363
Niedersachsen	60915200	Hochschule Hildesheim/Holzminden/Göttingen in Göttingen (FH)	125

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Niedersachsen	60925100	Hochschule Osnabrück in Osnabrück (FH)	596
Niedersachsen	60925200	Hochschule Osnabrück in Lingen (FH)	953
Niedersachsen	60965000	Leibniz - Fachhochschule Hannover (priv. FH)	390
Niedersachsen	70930000	Hannover, Kommunale H für Verwaltung in Niedersachsen (priv. Verw-FH)	31
Niedersachsen	~~~~~~~~	**total**	**3 762**
Nordrhein-Westfalen	11034000	U Duisburg-Essen	6
Nordrhein-Westfalen	11065000	U Siegen	215
Nordrhein-Westfalen	11070000	U Wuppertal	213
Nordrhein-Westfalen	61003100	FH Aachen in Aachen	120
Nordrhein-Westfalen	61003200	FH Aachen in Jülich	835
Nordrhein-Westfalen	61006100	FH Bielefeld in Bielefeld	257
Nordrhein-Westfalen	61006200	FH Bielefeld in Minden	247
Nordrhein-Westfalen	61009100	Hochschule Bochum (FH) in Bochum	357
Nordrhein-Westfalen	61009200	Hochschule Bochum (FH) in Velbert/ Heiligenhaus	170
Nordrhein-Westfalen	61011000	Hochschule für Gesundheit (FH) Bochum	183
Nordrhein-Westfalen	61012200	FH Bonn-Rhein-Sieg in Sankt Augustin	217
Nordrhein-Westfalen	61012300	FH Bonn-Rhein-Sieg in Hennef	314
Nordrhein-Westfalen	61015000	FH Dortmund	526

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Nordrhein-Westfalen	61018000	FH Düsseldorf	214
Nordrhein-Westfalen	61021100	FH Gelsenkirchen in Bocholt	122
Nordrhein-Westfalen	61021200	FH Gelsenkirchen in Gelsenkirchen	408
Nordrhein-Westfalen	61022200	FH Hamm-Lippstadt in Lippstadt	44
Nordrhein-Westfalen	61024200	FH Köln in Köln	451
Nordrhein-Westfalen	61024300	FH Köln in Leverkusen	9
Nordrhein-Westfalen	61027300	FH Ostwestfalen-Lippe in Lemgo	201
Nordrhein-Westfalen	61030100	FH Münster in Münster	592
Nordrhein-Westfalen	61030200	FH Münster in Steinfurt	293
Nordrhein-Westfalen	61033100	FH Niederrhein in Krefeld	782
Nordrhein-Westfalen	61033200	FH Niederrhein in Mönchengladbach	453
Nordrhein-Westfalen	61038100	FH Westliches Ruhrgebiet in Bottrop	25
Nordrhein-Westfalen	61038200	FH Westliches Ruhrgebiet in Mülheim	158
Nordrhein-Westfalen	61039000	Internationale Hochschule Bad Honnef-Bonn (priv. FH)	26
Nordrhein-Westfalen	61042100	FH des Mittelstandes (FHM) in Bielefeld (priv. FH)	38
Nordrhein-Westfalen	61042300	FH des Mittelstandes (FHM) in Pulheim (priv. FH)	29
Nordrhein-Westfalen	61043000	Fliedner Fachhochschule Düsseldorf (priv.)	87

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Nordrhein-Westfalen	61045000	Technische FH (TFH) Georg Agricola zu Bochum (priv. FH)	6
Nordrhein-Westfalen	61048000	H der Sparkassen-Finanzgruppe Bonn (priv. FH)	35
Nordrhein-Westfalen	61051100	Europäische FH (EUFH) in Brühl (priv.)	1 138
Nordrhein-Westfalen	61051200	Europäische FH (EUFH) in Neuss (priv.)	366
Nordrhein-Westfalen	61055100	praxisHochschule Köln in Köln (priv. FH)	165
Nordrhein-Westfalen	61055200	praxisHochschule Köln in Rheine (priv. FH)	94
Nordrhein-Westfalen	61057040	Priv. FH für Ökonomie und Management Essen in Bochum	225
Nordrhein-Westfalen	61057060	Priv. FH für Ökonomie und Management Essen in Bönen	75
Nordrhein-Westfalen	61057100	Priv. FH für Ökonomie und Management Essen in Dortmund	112
Nordrhein-Westfalen	61057200	Priv. FH für Ökonomie und Management Essen in Düsseldorf	62
Nordrhein-Westfalen	61057300	Priv. FH für Ökonomie und Management Essen in Duisburg	108
Nordrhein-Westfalen	61057400	Priv. FH für Ökonomie und Management Essen in Essen	3 442

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Nordrhein-Westfalen	61057500	Priv. FH für Ökonomie und Management Essen in Gütersloh	66
Nordrhein-Westfalen	61057520	Priv. FH für Ökonomie und Management Essen in Hagen	101
Nordrhein-Westfalen	61057600	Priv. FH für Ökonomie und Management Essen in Köln	253
Nordrhein-Westfalen	61057720	Priv. FH für Ökonomie und Management Essen in Münster	13
Nordrhein-Westfalen	61057800	Priv. FH für Ökonomie und Management Essen in Neuss	262
Nordrhein-Westfalen	61057900	Priv. FH für Ökonomie und Management Essen in Siegen	16
Nordrhein-Westfalen	61057910	Priv. FH für Ökonomie und Management Essen in Wesel	13
Nordrhein-Westfalen	61057950	Priv. FH für Ökonomie und Management Essen in Wuppertal	14
Nordrhein-Westfalen	61059000	IST-Hochschule für Management Düsseldorf (priv. FH)	480
Nordrhein-Westfalen	61060000	SRH Hochschule für Logistik und Wirtschaft Hamm (priv. FH)	49
Nordrhein-Westfalen	61066000	Hochschule Fresenius Idstein in Köln (priv. FH)	150
Nordrhein-Westfalen	61066100	Hochschule Fresenius Idstein in Düsseldorf (priv. FH)	47

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Nordrhein-Westfalen	61069100	Priv. Rheinische FH Köln in Köln	6
Nordrhein-Westfalen	61069200	Priv. Rheinische FH Köln in Neuss	204
Nordrhein-Westfalen	61072100	Priv. FH der Wirtschaft Paderborn in Bergisch-Gladbach	587
Nordrhein-Westfalen	61072200	Priv. FH der Wirtschaft Paderborn in Bielefeld	268
Nordrhein-Westfalen	61072400	Priv. FH der Wirtschaft Paderborn in Paderborn	482
Nordrhein-Westfalen	61072450	Priv. FH der Wirtschaft Paderborn in Marburg	88
Nordrhein-Westfalen	61072500	Priv. FH der Wirtschaft Paderborn in Mettmann	188
Nordrhein-Westfalen	61073000	HS für Medien, Kommunikation und Wirtschaft Berlin in Köln (priv. FH)	142
Nordrhein-Westfalen	61074000	FH der Diakonie Bielefeld-Bethel	86
Nordrhein-Westfalen	61078200	Kath. Hochschule Nordrhein-Westfalen in Köln	61
Nordrhein-Westfalen	~~~~~~~~	**total**	**16 996**
Rheinland-Pfalz	11115200	U Mainz in Mainz	13
Rheinland-Pfalz	11130000	U Trier	57
Rheinland-Pfalz	61105000	Technische Hochschule Bingen (FH)	62
Rheinland-Pfalz	61110100	Hochschule Kaiserslautern in Kaiserslautern (FH)	113
Rheinland-Pfalz	61110200	Hochschule Kaiserslautern in Pirmasens (FH)	9

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Rheinland-Pfalz	61110300	Hochschule Kaiserslautern in Zweibrücken (FH)	105
Rheinland-Pfalz	61115200	Hochschule Koblenz (FH) in Koblenz	455
Rheinland-Pfalz	61115300	Hochschule Koblenz (FH) in Remagen	254
Rheinland-Pfalz	61120000	Hochschule Ludwigshafen am Rhein (FH)	580
Rheinland-Pfalz	61125000	Hochschule Mainz (FH)	376
Rheinland-Pfalz	61130100	Hochschule Trier (FH) in Birkenfeld	49
Rheinland-Pfalz	61130300	Hochschule Trier (FH) in Trier	296
Rheinland-Pfalz	61135000	Hochschule Worms (FH)	236
Rheinland-Pfalz	61145000	Katholische Hochschule Mainz (FH)	279
Rheinland-Pfalz	**~~~~~~~~**	**total**	**2 884**
Saarland	61215000	Deutsche Hochschule für Prävention und Gesundheitsmanagement, Saarbrücken (priv. FH)	6 459
Saarland	~~~~~~~~	total	6 459
Sachsen	11310000	TU Dresden	1
Sachsen	11340000	DIU-Dresden International University (priv. H)	51
Sachsen	61305000	H für Technik und Wirtschaft Dresden, Hochschule für angewandte Wissenschaften	1
Sachsen	61310000	H für Technik, Wirtschaft und Kultur Leipzig, Hochschule für angewandte Wissenschaften	225

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Sachsen	61320100	H Zittau/Görlitz in Görlitz (FH), Hochschule für angewandte Wissenschaften	16
Sachsen	61320200	H Zittau/Görlitz in Zittau (FH), Hochschule für angewandte Wissenschaften	306
Sachsen	61325300	Westsächsische H Zwickau in Zwickau, Hochschule für angewandte Wissenschaften	8
Sachsen	61335000	Hochschule für Telekommunikation Leipzig (priv. FH)	1 050
Sachsen	61355000	Evangelische Hochschule Dresden (FH)	40
Sachsen	~~~~~~~~	**total**	**1 698**
Sachsen-Anhalt	11410000	U Magdeburg	109
Sachsen-Anhalt	61405100	H Anhalt in Bernburg (FH)	28
Sachsen-Anhalt	61405200	H Anhalt in Dessau (FH)	23
Sachsen-Anhalt	61405300	H Anhalt in Köthen (FH)	20
Sachsen-Anhalt	61410200	H Harz in Wernigerode (FH)	41
Sachsen-Anhalt	61415100	H Magdeburg-Stendal in Magdeburg (FH)	76
Sachsen-Anhalt	61415200	H Magdeburg-Stendal in Stendal (FH)	81
Sachsen-Anhalt	61420000	Hochschule Merseburg (FH)	54
Sachsen-Anhalt	~~~~~~~~	**total**	**432**
Schleswig-Holstein	61525000	Priv. FH Elmshorn (Nordakademie)	1 469
Schleswig-Holstein	~~~~~~~~	**total**	**1 469**
Thüringen	61605000	FH Erfurt	62

Länder/ countries	universities	H = university, U = university, FH = University of Applied Sciences, University of Applied Sciences	Students in the dual study program (total)
Thüringen	61610000	Ernst-Abbe-Hochschule Jena (FH)	104
Thüringen	61615000	Hochschule Nordhausen (FH)	3
Thüringen	61620000	Hochschule Schmalkalden (FH)	19
Thüringen	61640000	SRH FH für Gesundheit Gera (priv. FH)	498
Thüringen	61645100	Duale Hochschule Gera-Eisenach in Eisenach (FH)	521
Thüringen	61645200	Duale Hochschule Gera-Eisenach in Gera (FH)	727
Thüringen	**~~~~~~~~**	**total**	**1 934**
Insgesamt			**92 467**

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15.2 List of cooperative state universities and higher education institutions with dual courses of study listed by subject group and area of study

subject group	fields of study		Students in the dual studyprogram (total)
Geisteswissenschaften	1	Geisteswissenschaften allgemein	2
Geisteswissenschaften	5	Geschichte	13
Geisteswissenschaften	7	Allgemeine und vergleichende Literatur- und Sprachwissenschaft	1
Geisteswissenschaften	**~~**	**total**	**16**
Sport	22	Sport, Sportwissenschaft	99
Sport	~~	total	99
Rechts-, Wirtschafts- und Sozialwissenschaften	23	Rechts-, Wirtschafts- und Sozialwissenschaften allgemein	327

subject group	fields of study		Students in the dual studyprogram (total)
Rechts-, Wirtschafts- und Sozialwissenschaften	27	Sozialwesen	3 312
Rechts-, Wirtschafts- und Sozialwissenschaften	28	Rechtswissenschaften	279
Rechts-, Wirtschafts- und Sozialwissenschaften	29	Verwaltungswissenschaften	425
Rechts-, Wirtschafts- und Sozialwissenschaften	30	Wirtschaftswissenschaften	35 818
Rechts-, Wirtschafts- und Sozialwissenschaften	31	Wirtschaftsingenieurwesen mit wirtschaftswissenschaftlichem Schwerpunkt	1 789
Rechts-, Wirtschafts- und Sozialwissenschaften	32	Psychologie	49
Rechts-, Wirtschafts- und Sozialwissenschaften	33	Erziehungswissenschaften	792
Rechts-, Wirtschafts- und Sozialwissenschaften	~~	**total**	**42 791**
Mathematik, Naturwissenschaften	36	Mathematik, Naturwissenschaften allgemein	6
Mathematik, Naturwissenschaften	37	Mathematik	607
Mathematik, Naturwissenschaften	40	Chemie	147
Mathematik, Naturwissenschaften	42	Biologie	54
Mathematik, Naturwissenschaften	43	Geowissenschaften (ohne Geographie)	1
Mathematik, Naturwissenschaften	~~	**total**	**815**
Humanmedizin/ Gesundheitswissenschaften	48	Gesundheitswissenschaften allgemein	16 752
Humanmedizin/ Gesundheitswissenschaften	~~	**total**	**16 752**
Agrar-, Forst- und Ernährungswissenschaften, Veterinärmedizin	57	Landespflege, Umweltgestaltung	38
Agrar-, Forst- und Ernährungswissenschaften, Veterinärmedizin	58	Agrarwissenschaften, Lebensmittel- und Getränketechnologie	506
Agrar-, Forst- und Ernährungswissenschaften, Veterinärmedizin	~~	**total**	**544**
Ingenieurwissenschaften	61	Ingenieurwesen allgemein	2 239

subject group	fields of study		Students in the dual studyprogram (total)
Ingenieurwissenschaften	62	Bergbau, Hüttenwesen	6
Ingenieurwissenschaften	63	Maschinenbau/Verfahrenstechnik	8 060
Ingenieurwissenschaften	64	Elektrotechnik und Informationstechnik	5 061
Ingenieurwissenschaften	65	Verkehrstechnik, Nautik	596
Ingenieurwissenschaften	66	Architektur, Innenarchitektur	31
Ingenieurwissenschaften	68	Bauingenieurwesen	2 089
Ingenieurwissenschaften	69	Vermessungswesen	133
Ingenieurwissenschaften	70	Wirtschaftsingenieurwesen mit ingenieurwissenschaftlichem Schwerpunkt	3 034
Ingenieurwissenschaften	71	Informatik	9 884
Ingenieurwissenschaften	72	Materialwissenschaft und Werkstofftechnik	26
Ingenieurwissenschaften	**~~**	**total**	**31 159**
Kunst, Kunstwissenschaft	76	Gestaltung	193
Kunst, Kunstwissenschaft	**~~**	**total**	**193**
Außerhalb der Studienbereichsgliederung/ Sonstige Fächer	83	Außerhalb der Studienbereichsgliederung	98
Außerhalb der Studienbereichsgliederung/ Sonstige Fächer	**~~**	**total**	**98**
A total of			**92 467**

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Implementation of a dual system of higher education within foreign universities and enterprises

The dual system of higher education, a form of study that links academic studies at higher education institutions with practical training in enterprises, has become steadily more important in recent years, not only in Germany but also internationally. According to the Federal Institute for Vocational Education and Training (BIBB), the number of students involved in this model of study in Germany rose from just under 40,000 to approx. 100,000 within ten years. An increasing number of employers appreciate the dual system of study because it not only achieves a better balance between higher education and the needs of the employment market but also makes it easier to recruit and retain students as prospective top performers or management personnel. Enterprises also see the high level of practical orientation within a higher education programme integrating vocational education and training as a crucial factor in their future economic success. Project work in Thailand and Kazakhstan from 2015 to 2017 revealed a great interest in promoting the dual system of higher education among managers there. The aim of this book is to give decision-makers at higher education institutions outside of Germany both an overview of as well as realistic insight into the form of study known as "dual higher education" in Germany. To this end, specific know-how on the implementation of a dual higher education programme has been compiled and prepared in an appropriate manner. A brief historical outline of how the dual system of vocational education and training evolved in Germany in the 20th century supplies the background for understanding the current system of dual higher education at universities and in enterprises. Following chapters, which are devoted to aspects such as the organisation of dual higher education programmes, supervision of the students, the training concept, the management of information and communication as well as the quality standards for dual courses, all convey relevant knowledge on these topics through a structured and proficient approach. At the same, the requirements for the accreditation of dual higher education courses in Germany together with the recommendations of the Accreditation Council in this respect are set out in abridged form as guidance. The individual chapters are accompanied by a PowerPoint summary together with a workshop description intended as motivation to discuss and pursue the topic further.

Hamburg, April 2018 Wilfried Hesser