3 Example from the Czech Republic

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3.1.1 Study pathways

Vocational education and training at post-secondary (non-tertiary) level
At present, the only form of vocational education at post-secondary level are so-called follow-up studies (ISCED 4). The studies are designed for graduates of three-year programmes who hold a vocational certificate and make it possible for them to acquire secondary education with 'maturita'. This provides access to tertiary education and broader employment opportunities (in positions requiring secondary education with 'maturita'). Follow-up studies last two years. As well as daily attendance, they may include evening courses, self-study with consultations, distance or combined courses (in this case the study can be longer). The typical age of students is 19-20. Admission to follow-up studies is conditional on completion of a three-year programme and the acquisition of a vocational certificate. Admission requirements are similar to those at secondary schools. The school director may decide that an entrance examination will be part of admission proceedings. One of the principal admission criteria is performance in prior education. Applicants for follow-up courses are required to have completed a programme in the same or related field. Follow up courses may be provided only by secondary schools providing programmes completed by 'maturita' in a particular field.
The content of education in follow-up courses follows from that in the three-year programme in the relevant field and is designed to complement it so that it corresponds to education with 'maturita'. The curriculum includes both vocational and general education (the ratio is 55:45). The vocational component contains more theory than the three-year programme, places more emphasis on intellectual than manual skills, and develops organisational and management skills, and business and ICT knowledge.
Follow-up courses are completed by a 'maturita' examination and the graduate receives a 'maturita' certificate. Apart from a level of education (secondary education with 'maturita') the graduates acquire a qualification to perform middle-level technical and business occupations or demanding manual occupations in the relevant field. Most graduates enter the labour market directly. They may also seek admission to studies at tertiary level (at higher professional schools or higher education institutions).

Vocational education and training at tertiary level
Education at tertiary level in the CR is not divided into vocational (professional) and general education. Tertiary education makes it possible for graduates of its programmes at various levels either to enter the labour market or to continue studying at another level – either immediately after graduation or after some time. Access to tertiary programmes is conditional on meeting the relevant admission requirements. Tertiary education is provided by higher professional schools (ISCED 5B), conservatoires (ISCED 5B) and higher education institutions (ISCED 5A, 6).

Tertiary professional schools

Since 1996 tertiary professional schools (HPS) have been operating in this sector. The objective of HPSs is to offer students the opportunity of obtaining a vocational qualification relevant to demanding professional activities, or of enhancing the qualification they have already achieved.

HPSs provide study programmes lasting three to three and a half years. Applicants must have completed upper secondary education with 'maturita' (normally 19 and older). The school director may decide whether an entrance examination should be part of admission proceedings, and what its content should be. The programmes may be studied full-time or part-time.

The curricula are designed by individual schools. However, they must be approved by the Ministry of Education, Youth and Sports (MoEYS) based on a recommendation issued by the Accreditation Commission for higher professional education. The ratio between general, general vocational and specific vocational subjects is roughly 20:40:40. Practical training in a specific field constitutes an important component of this type of study. It may last up to one year during which students work on a paper or project which is then evaluated jointly by the school and the relevant company or institution. The instruction consists of lectures and seminars, practicals, laboratory exercises and work placements. The assessment of learning outcomes and marking are fostered by assessment regulations designed by each school, which must be in line with the relevant legislation and approved by the MoEYS. These regulations provide for a marking scale (mostly four grades), and assessment methods. It is also stipulated in the regulations which of these methods will be applied to particular subjects. The school also regulates the organisational details concerning examination retakes, including the deadlines for fulfilling school duties due for one term or academic year.

The studies are completed by 'absolutorium'. 'Absolutorium' is a vocational examination consisting of an examination in the theory of vocational subjects, a foreign language, a graduate thesis and its defence. The composition and number of vocational subjects in which the exam is taken are determined by the relevant curricula. The defence of the graduate thesis may include a test of practical skills. Upon passing 'absolutorium', the student of the HPS attains higher professional education and the title of specialist with a diploma (diplomovaný specialista), abbreviated as DiS. and stated behind the name. Graduates from higher professional schools find employment in various fields of economy and are required to master qualified activities of an advanced nature. They may further enhance their qualification by studying at higher education institutions on the same conditions as secondary school leavers who hold a 'maturita' certificate.

Higher education institutions

Higher education institutions provide accredited bachelor, master and doctoral study programmes and lifelong learning programmes.

Bachelor study programmes are designed to prepare students for an occupation and for further studies in a master study programme. They last three to four years (ISCED 5A). Master study programmes focus on acquiring theoretical knowledge in line with modern science, research and development, on mastering its practical application, and on nurturing creative activities. In arts disciplines it is focused on demanding artistic training and the development of talents.

Master study programmes follow on from bachelor programmes with a standard length of one to three years (ISCED 5A). If the nature of the study programme so

requires, accreditation may be awarded to a master programme which does not follow from a bachelor programme. In this case it lasts four to six years. A doctoral study programme may follow only after the completion of a master programme. These programmes focus on research and independent creative activities concerned with research and development, or on independent theoretical or creative work in arts. The standard length is three years (ISCED 6).
A minimum requirement for admission to a university is completion of secondary education with 'maturita', or 'absolutorium' in the case of conservatoires. (Arts disciplines at universities may constitute an exception in this respect. However, the subsequent passing of a 'maturita' examination is a condition for the award of a university degree). Admission to master studies following on from a bachelor programme is conditional upon due completion of the bachelor programme. Admission to doctoral programmes is conditional upon due completion of a master programme. A higher education institution may set additional admission requirements concerning, for example, particular knowledge, capacities or aptitudes. There is normally an entry examination which tests whether the applicant meets the requirements.
A study programme is designed and submitted for accreditation by the HE institution, or by an institution that seeks to deliver it in cooperation with the HE institution. The nature of the programme is determined by its type (bachelor, master, doctoral), and the form of study (full-time, distance or a combination of the two). Study programmes are subject to accreditation issued by the MoEYS based on a recommendation of the Accreditation Commission, set up by the government. Bachelor and master programmes are based on two major methods of instruction – lecturers and practicals. Doctoral study programmes are implemented in line with an individual study plan under the guidance of a supervisor.
The studies in bachelor and master programmes are completed by state final examinations and the defence of a bachelor or master thesis. The graduates are awarded an academic degree in line with the level and field of education. The studies in doctoral programmes are completed by a doctoral examination and the defence of a dissertation. Upon passing the examination the degree of Doctor (Ph.D.) is awarded.

Those students who have completed a study programme with „maturita' may seek admission to a higher education institution or a tertiary professional school. Those who have completed a vocational programme with a „vocational certificate' can take a two-year follow-up courses and pass maturita. Following this they may seek admission to a tertiary education.

Programmes providing **secondary education with a vocational certificate** (ISCED 3C) facilitate the acquisition of a qualification for manual occupations (e.g. salesperson, locksmith, auto-mechanic, electrician, bricklayer, roofer, cook, tailor). The main objective of these programmes is **preparation for the labour market.** Most programmes last three years, some two years. They may be undertaken in various forms: daily attendance, evening courses, self-study with consultations, distance and combined studies. It is also possible to undertake a shortened programme lasting 1 to 1.5 years). This shortened programme is

designed for applicants who have secondary education with 'maturita' and seek to achieve an additional qualification. A typical age of the students is 15-18.
Programmes providing **secondary education with 'maturita'** (ISCED 3A) facilitate the acquisition of a qualification for **middle-level technical, business and other jobs and occupations in production or services** (e.g. healthcare, public administration, welfare, education). Achievement of this level of education is a requirement for admission to vysoká škola (VŠ - higher education institution) and vyšší odborná škola (VOŠ – higher professional school). The programmes last four years (daily attendance), in the other forms (evening, self-study with consultations, distance combined,) they are normally one year longer. Studies in the daily form are undertaken by students aged 15-19, the other forms are mostly used by adult learners.
Courses are mostly prolonged by one or, at most, two years for disabled students – e.g. for instance with impaired hearing and vision. Since 1 January 2005 a new educational programmes have been introduced – so-called 'shortened studies' (1-2 years) for applicants with 'maturita' in a different branch of education who seek to achieve an additional qualification.

All **final examinations** (in ISCED 3C programmes) are entirely or largely designed to test the performance of the student in the vocational component of the programme. The **'maturita' examination** (ISCED 3A programmes) also contains a component designed to test student performance in general subjects (it is currently compulsory to take 'maturita' in the Czech language and either mathematics or a foreign language – the decision is up to the student). Examinations always consist of a written, oral and practical part. In view of the existing drawbacks in assessment – particularly the non-existence of student performance assessment standards - **new regulations** concerning completion of studies are being developed. The regulations should be in place from 2010.

Admission requirements
The primary requirement for admission to follow-up courses is the **completion of a three-year vocational programme** and acquisition of secondary education with a vocational certificate. Admission proceedings to follow-up courses are similar to those at secondary schools. The school director may decide that an entrance examination will be part of the proceedings. One of the basic admission criteria is performance in previous education.
Applicants are admitted to follow-up courses on the condition that the vocational programme they have completed (and in which they have acquired a vocational certificate) is in the same or a related field. For example, an individual who holds a vocational certificate as a 'baker' may be admitted to a 'maturita' course in 'food technology/flour processing' (similarly: tailor – clothing, electrician – electrical engineering). Decisions on admission are the responsibility of the schools director who takes account of the results of admission proceedings. The total number of students admitted to follow-up courses at a particular school is regulated by a limiting number set by the school's founding body.

Tertiary professional education has a strong practical focus and contains both theory and practical training. Practical training is organised either at school or in the form of work placements in companies. The studies are completed by an

'absolutorium', consisting of a theoretical examination in vocational subjects, a foreign language and the defence of a thesis. **'Absolutorium'** must be undertaken within five years of successful completion of the final year of the programme. Graduates can use the title *diplomovaný specialista DiS* (specialist with a diploma) which is not an academic title. Academic titles may only be awarded by VŠ. Recognition of prior education acquired by VOŠ students is up to the relevant school director. The director recognises a qualification provided that the student documents its acquisition by presenting the relevant certificate or proves this in some other way. The director may also recognise a part of a qualification under the same conditions as for a full qualification, provided that no more than 10 years have passed since the student undertook this part of his/her education or if the student proves the relevant knowledge in an examination. The examination is set by the school director. Based on his/her recognised educational qualifications, the student is exempted from attending some or all classes and from the relevant assessment. Higher professional studies (ISCED 5B) are not recognised as equivalent to Bachelor studies at VŠ (ISCED 5A), and 'absolutorium' at a VOŠ does not give a graduate a right to apply for Master studies following from a Bachelor programme. VOŠ do not undertake research and students are therefore not trained to combine studying with research activities. Public VOŠ are the only type of public school which collect tuition fees (regulated). The level of tuition fees is set by a *Ministerstvo školství mládeže a tělovýchovy* (MŠMT – Ministry of Education and Sports) decree for various field of education. The fees per year range from 2,500 CZK (approx. 83 EUR) to 5,000 CZK (approx. 167 EUR). Employers got to know VOŠ graduates relatively quickly and accept them for their good professional knowledge and skills, the capacity to adjust quickly to job requirements and their language skills. The **rate of unemployment** among them remains lower than the average unemployment rate for school leavers in general. In 2003 the average rate of unemployment for all school leavers was 15 %, whereas for VOŠ leavers it was only 10.6 %

Studies at *vyšší odborná škola* (VOŠ – tertiary professional school)

According to the schools law, admission proceedings to VOŠ are exclusively the **responsibility of the school director**. Applicants are required to have completed secondary education with 'maturita' and to meet the relevant admission requirements and show the required capacities, knowledge, interests and health condition. All individuals who have met **the basic statutory requirement** (i.e. secondary education with 'maturita', ISCED 3A) have the right to file an unlimited number of applications for higher professional studies and to undergo admission proceedings which do not discriminate against any applicant. There are no restrictions as regards the selection of an VOŠ programme by the applicant. There are no restrictions regarding the age and the previous education of the applicants for higher professional studies. However, graduates of vocational programmes at secondary level normally go on to higher professional education with the same focus. The network of VOŠ is broad and their provision diverse. Some programmes are provided only in regions where there are good conditions for the arrangement of work placements and in terms of the vocational specialisation. For example, the VOŠ specialising in fisheries is in Jihočeský region which is characterised by many lakes and a rich tradition of fish farming. These schools are open to applicants from across the Czech Republic (CR). The

location where the student undergoes his/her work placement is mostly determined by the school which has a contract for work placements with the relevant legal entities or individuals. In the academic year 2003/2004 a total of 24, 339 individuals applied, and 15, 507 were admitted - i.e. 63.7 %. The proportion of those admitted out of the number of those who actually turned up for the admission proceedings is 72.5 %. Of the overall intake number 23 % were graduates of *gymnázia* and 73.9 % of *střední odborná škola* (SOŠ - secondary technical school) and *střední odborné učiliště* (SOU – secondary vocational school) leavers. The **tackling of difficulties related to admission** to studies is up to each individual. VOŠ offer **preparatory courses** for applicants where they may improve or complement their knowledge and skills so that they are better prepared for admission examinations. VOŠ also offer **complementary courses** to students (optional subjects). These are primarily designed for those students whose previous education was not fully compatible with the VOŠ specialisation. Attendance at these courses is at the students' discretion. Recognition of learning gained in prior education is, for example, possible when transferring to VOŠ from *vysoká škola* (VŠ – higher education institution) or from another VOŠ. It is exclusively the responsibility of the school director (see above). Students in other than full-time studies (evening studies, self studies with part-time lectures, distance studies, combined studies) often get their work placement recognised. These are mostly students who work in the relevant field. There are not yet mechanisms in the CR for the recognition of non-formal and informal learning. In the course of studies VOŠ students can transfer to another VOŠ, change the programme, suspend studies (for a maximum of two years), or repeat a year. They must apply for the above in writing. Decisions on these matters are at the discretion of the school director. VOŠ do not have programmes specifically designed for the disabled. Only those applicants whose health condition is assessed by a physician as suitable for the studies are admitted. Specific needs of applicants are addressed on an individual basis. The school director may approve, based on a request in writing, an individual study plan for students with special learning needs, special talents or in other justified cases. The school director may also grant various financial allowances to students from socially disadvantaged backgrounds. In the case of public VOŠ, where regulated tuition fees are paid, the amount may be reduced to as low as 50% of the fee set. Moreover, students may be granted achievement-related scholarships based on the school's regulations. The scholarship regulations are issued by the school director based on the consent of the school's founding body.

3.1.2 Permeability

The new Education Act No. 561/2004 Coll. (effective from 1st January 2005) increased permeability within the initial education system, as it made the education pathways more transparent and introduced the possibility for school heads to recognise and make exemptions for acquired parts of education programmes.
Acquisitions of the new Education Act (the possibility of exemptions and the new concept of maturita and final apprenticeship examinations) and the implementation of the Act No. 179/2006 Coll. of 30 March 2006 on Verification

and Recognition of Further Education Results and on the Amendment to Some Other Acts (Act on the Recognition of Further Education Results) which defines the National Qualifications Framework and the system of recognition of prior learning improve opportunities for individuals to increase mobility within and between VET and general and/or higher education both during their initial formal schooling and their lifelong (and life-wide) learning.

The new School Act, which came into effect in 2005, provides an initial solution to the issues of increasing mobility both within and between VET and general and/or higher education. It contains certain provisions that facilitate transfers between all educational programmes and shorten ways to qualifications. In admission and progression proceedings, school directors are enabled to recognise prior both formal and non-formal education as well as informal learning and make exemptions for the recognised parts of study. Although recognising education acquired elsewhere is not based on objective criteria, a credit system etc., it may be expected that this approach will at least partially facilitate transfers within initial and between continuing and initial education. Another step was made by the Act No. 179/2006 Coll. on the Recognition of Further Education Results (which came into force on 1 August, 2007). It stipulates the creation of a National Qualifications Framework and the bodies and procedures for recognition of learning results regardless the ways of their acquirement. No further essential changes are foreseen in IVET as the structure of responsibilities and coordination of work at the national and provider levels are concerned. It is too soon, however, to anticipate possible further changes in this direction in connection with the process of making the European concept of LLL a reality. Education provided by schools will be gradually modularised to allow for a more flexible combination of initial and continuing education programmes, or for the completion of a missing part of education as a prerequisite for admission to schools at more advanced levels. Besides creating the National Qualifications Framework the Czech Republic is preparing for implementation of ECVET as another tool which is important for creating the area of LLL at both national and European levels.

3.1.2.1 Permeability between particular levels of education

Besides providing initial non-tertiary VET programmes already at ISCED 3 level, the Czech education and training system is characterised through continuing general education as a part of curricula in all initial VET programmes offered at this level. This enables for all pupils to be offered basis for LLL and/or subsequent tertiary studies (access is direct for graduates of ISCED 3A programmes, after completing an ISCED 4A follow-up study for graduates of ISCED 3C programmes) and a vocational or technical qualification (at EQF levels 2, 3 or 4) for an immediate entry at labour market (graduates of general upper secondary education obtain no specific job qualification, nevertheless when entering directly the labour market, they are comparatively well accepted by employers).

A. A prerequisite for **entering an upper secondary** school is completion of compulsory education and acquiring the level of basic education (which is of the ISCED 2A type, except for some programmes of special education for mentally

disabled). Admittance to any upper secondary school is conditional upon completing (successfully or not) the basic education and meeting the school specific admittance requirements (usually an examination).
B. Upper secondary general or technical or vocational education at 'maturita' level (ISCED 3A)[32] are a prerequisite for **entering tertiary education**.[33] Graduates of vocational upper secondary education in programmes completed by the final examination with or without apprenticeship certificate (ISCED 3C) can pass an extension course completed by the Maturita examination (ISCED 4A) and can also enter tertiary education. The conception of parallel providing general and vocational education in curricula of all types and fields of VET programmes at the ISCED 3 level enables the mentioned high vertical and also substantial horizontal permeability of initial formal education, and the high vertical transmissibility makes clear why participation in IVET at the ISCED 3 level is so high in the CR (pupils and their parents prefer the possibility to gain an initial vocational qualification already here, when they do not loose the possibility of subsequent tertiary education directly or after completing follow-up studies to get a Maturita certificate).
C. Transfers at the tertiary level depend on the type of institution: Study at tertiary technical schools (ISCED 5B) was not formerly recognised for entrance to university tertiary education (ISCED 5A). From 2004 these schools can set specific admission requirements for students or graduates in their accredited educational programmes. However, most providers of the tertiary education are schools of the university type, providing both Bachelor and Master degrees of the university type (ISCED 5A) in all fields of tertiary education, with access to post-gradual studies and degrees (ISCED 6).

3.1.2.2 Horizontal mobility

There is basically well operating initial formal education in the CR with IVET for all levels and fields of initial qualifications within its framework. From the pedagogical point of view its above described structure brings an advantage that it enables pupils interested in studying or those successful at school to choose a Maturita educational programme (whether with wide or narrower profile), and those more practically focused to choose a field of practically focused VET programme of apprentice type (whether with a certificate of apprenticeship or with Maturita certificate) within choosing a study or professional career at the age of 15, while none of both the possibilities would disqualify the other one in further development of educational or professional career. For example grammar school leavers do not have to continue studying at tertiary level, but may train in a vocational field and those who originally did not choose a studying path can decide for that later. Very important is postsecondary further education (ISCED 4), which enables pupils to change or broaden their original educational pathway. Postsecondary education is organised in three types of study. A holder of a

32 From legal point of view the Maturita exam achieved in any ISCED 3A type programme is equal and enables access to all tertiary education programmes (ISCED 5B and ISCED 5A types).
33 A maturita (ISCED 3A) or an absolutorium at a conservatoire (ISCED 5B) also give access to both arts courses and other fields of education at university tertiary level (ISCED 5A).

Maturita certificate can take shortened courses to attain an apprenticeship certificate (ISCED 4C) or sit for another Maturita examination in other field of study (ISCED 4A), a holder of an apprenticeship certificate can take a follow-up study to attain the Maturita certificate (ISCED 4A). There are, of course, also regular CVET programmes (ISCED 4C) for maintenance, development and updating or modification (specialisation, extension, etc.) of initial qualifications at the same qualification level (EQF 2, 3 or 4).

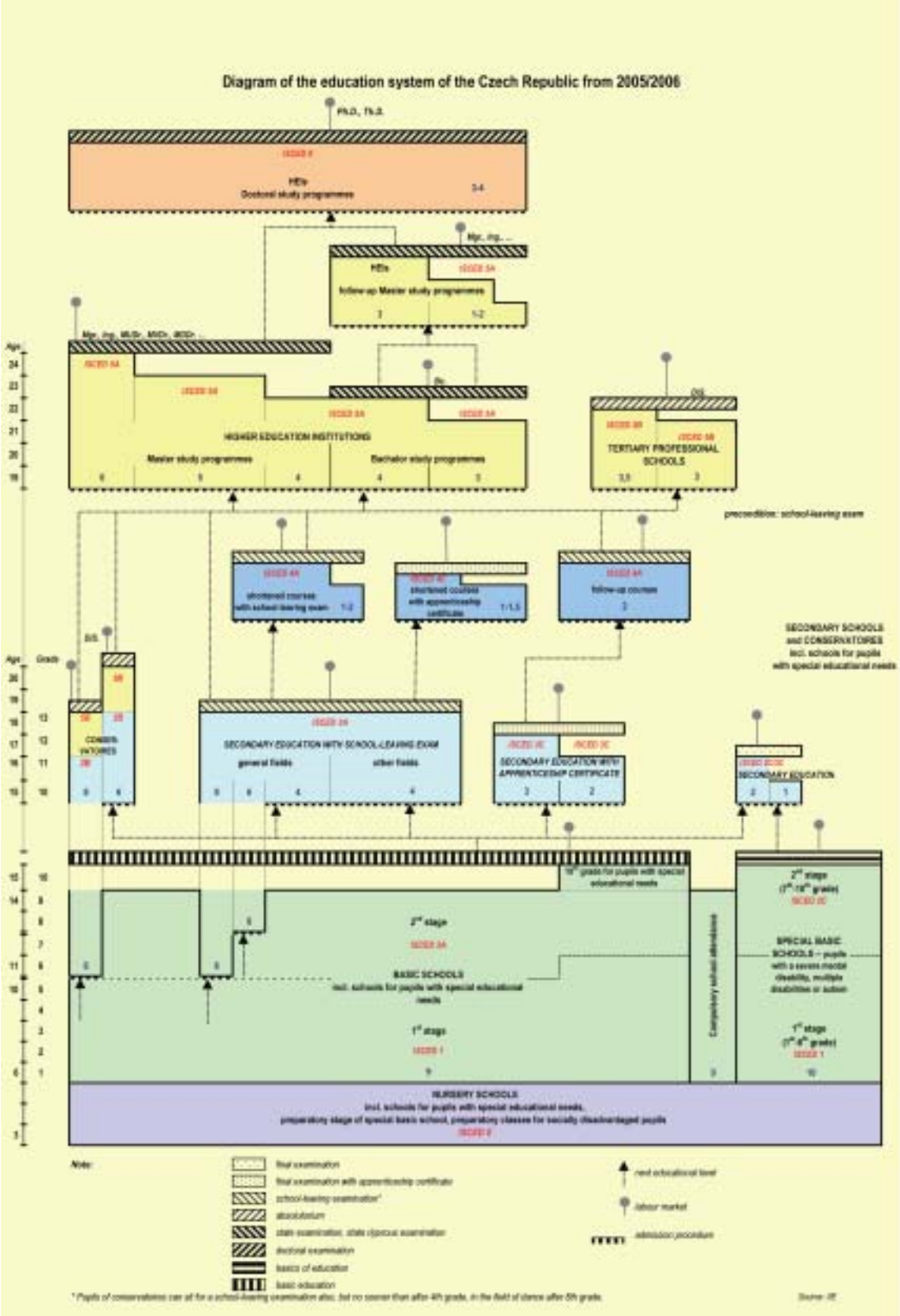
There are very limited opportunities for a **horizontal transfer between general and vocational educational pathways**. In view of the fact that educational programmes are linear – i.e. they are conceived as integrated 3-4-year studies based on the relevant curriculum, transfers are very rare and occur particularly because of failure in the originally selected programme (mostly transfers from gymnazium to SOŠ. Recognition of prior education depends on the judgment and decision of the school director. Return to general education after completion of secondary vocational education virtually never occurs, as graduates of vocational and technical programmes with 'maturita' (ISCED 3A) can access directly tertiary education, and graduates of vocational programmes with a vocational certificate (ISCED 3C) can undergo follow-up courses (ISCED 4A) completed by 'maturita' and then continue in tertiary education

3.1.2.3 Obstacles

The situation as for the conception and implementation of initial and further education is in principle convenient, and if there is something to change, it is particularly in relation to the efforts for shortening and diversifying the learning pathways to qualifications and for increasing mobility of both workforce and persons preparing for an occupation in European extent (through creating the European area of LLL by developing and implementing its tools and the corresponding tools at national level, i.e. EQF and NQF, ECVET and ECTS with national equivalents as well as Europass, Ploteus, etc.). For the time being, formal qualifications (certificates) that can be attained within both initial and further education and training are, in principle, bound to the respective educational programmes and their providers: For complete qualifications obtainable within IVET (incl. the 'second chance'), VET providers (schools) are entitled to carry out exams and other summative assessment procedures and to deliver certificates as well. The same is true for formally recognised CVET programmes for maintenance, development and updating or modification (specialisation, extension, etc.) of initial qualifications. Both of these VET qualifications are awarded by the Ministry of Education, Youth and Sports. For certificates that can be obtained within the so-called statutory education (e.g. various driver or welding licences, etc.), providers of the respective training courses are entitled to do this, with legislation and other regulations concerning this education being prepared and put into action by the respective ministries (and organisations charged by them with this task). For non-formal education and informal learning (connected with work, voluntary public activities, leisure activities, hobbies, etc.), no formal certificates exist, in principle. However, most various forms of their appraisal and awarding do exist, of course (for instance in arts or sports).

Planned measures to overcome the obstacles:
The above approach of LLL implementation has been elaborated and piloted through ESF-funded projects with the objective to develop a relevant scheme and to gradually launch this on a national basis. Important ESF projects in this respect are the NSP project ('The National Occupations Framework', 2007 – 2008, www.nsp.cz) of the Ministry of Labour and Social Affairs and two system projects of the Ministry of Education, Youth and Sports, namely the NSK project ('The development of the National Qualifications Framework (NQF) supporting links between initial and further education', 2005-2008, www.nsk.nuov.cz) and the UNIV project ('Recognition of the results of non-formal education and informal learning in networks of schools providing education services for adults', 2005-2008, www.univ.nuov.cz) which are carried out by NÚOV. Further development of these instruments will be carried out in the following phase of the ESF projects (2008 – 2015).

3.1.3 Educational system of the Czech Republic



3.2 Selection of cases- examples of good practice

The new School Act No. 561/2004 Coll. (effective from 1st January 2005) increased permeability within the initial education system, as it made the education pathways more transparent and introduced the possibility for school heads to recognise and make exemptions for acquired parts of education programmes. This Act provides an initial solution to the issues of increasing mobility both within and between VET and general and/or higher education. It contains certain provisions that facilitate transfers between all educational programmes and shorten ways to qualifications. In admission and progression proceedings, school directors are enabled to recognise prior both formal and non-formal education as well as informal learning and make exemptions for the recognised parts of study. Although recognising education acquired elsewhere is not based on objective criteria, a credit system, etc., it may be expected that these provisions will at least partially facilitate transfers within initial and between continuing and initial education.

The new Education Act uses recognition of 'education' (where 'knowledge, skills and competences' are defined, if ever, only in framework of the curricula) as a primary concept. For the upper secondary level of education, the new Education Act stipulates conditions for recognition of the applicant's prior education in case of enrolment during the course of studies (e.g. when transferring from one programme or school to another) or re-entering in a discontinued one (e.g. after its interruption or leaving). For upper secondary and non-university tertiary levels of education, it stipulates also conditions for passing the so-called individual examinations (that is exams covering parts of the Final examination or Maturita or Absolutorium) in the framework of further education of the adult population provided by upper secondary schools or tertiary professional schools. Potentially, individual examinations can be taken without preceding participation in a preparatory course. For detailed conditions see Section 113 of the Act. Obtaining certificate(s) on having passed such partial exam(s) can be sometimes helpful in maintaining or seeking for a job and/or in access to subsequent education. However, the full qualification in the given field and the corresponding educational level (without which access to subsequent education at a higher level or complementary CVET at the same level of qualification is impossible) cannot be attained by mere accumulation of all constitutive partial certificates. For this, the respective complex examination (the Final examination or Maturita or Absolutorium) must be subsequently passed moreover, anyhow. This is perhaps main reason why this way of obtaining full qualifications is, in fact, scarcely used (it is too complicated, if not impracticable both for applicants and schools, the head teachers, esp. of public schools, being moreover afraid of being blamed by school inspectors for their possibly incorrect specifying the procedure and tools of recognition).

3.2.1 Interface between VET and HE: condition for entering HE is Maturita final examination

The entrance qualification for studying at tertiary technical school (non-university level) is the Maturita final examination at a secondary school. Some tertiary technical schools require also an entrance examination (depends usually on the number of applicants). This is a typical procedure in the Czech Republic.
In special cases an applicant without Maturita can be accepted with a condition to pass the examination during the first month after the beginning of study program.

3.2.2 Interface between non-university (tertiary technical schools) and university level

Shortening of the respective study program; permeability in both directions is dependent on existence of framework agreements between individual schools

In this area we can find some examples of good practice, unfortunately only of them is in the field of electrotechnics/electrical engineering.

3.2.2.1 Field of study: Company management

The **Tertiary Professional School, Business Academy and Secondary Professional School EKONOM**, o. p. s., Litoměřice, Palackého 730/1 has an agreement with **Banking Institute/College of Banking (BICB)** in Prague regarding the bachelor studies. Graduates of the Tertiary Professional School EKONOM can continue in bachelor studies at the Banking Institute in Prague. Banking Institute recognises some exams of the Tertiary Professional School graduates and in that way enables to reduce the overall length of bachelor study program of the three years to one year.

3.2.2.2 Field of study: Banking, Marketing, Financing and Accounting and Enterprise

The Tertiary Professional School and Secondary Professional School of Business, Services and Enterprise, Kněžskodvorská 33/A, České Budějovice has an agreement with the University of Applied Economics in České Budějovice.
This University is willing to recognise (on the basis of student´ s application and confirmation from school) all successfully passed exams from some subjects (only grades: excellent or very good) to graduates of the above mentioned Tertiary Professional School who want to study in the bachelor study program. The graduates will receive an appropriate amount of credits. This procedure enables to shorten the length of study.

3.2.2.3 Field of study: Electrical engineering, Information technology

The **Tertiary Professional and Secondary Technical School**, Mariánská 1100, Varnsdorf.
This school organizes and participates in the international students contest (olympics): Elektrotechnik- Olympiade „NEISSE -ELEKTRO 2000' for individual students and teams from the Czech Republic, Germany and Poland.
Those Czech students who received a certain amount of points in this competition are accepted to Hochschule Zittau/Gorlitz, Fachbereich Elektrotechnik without an entrance examination.
Tertiatiary Professional School in Varnsdorf concluded an agreement with the University of Jan Evangelista Purkyně – Faculty of Science in Ústí nad Labem and the cooperation between these two schools will start from the school year 2008/2009.
Students of the field Information Technology from the Tertiary Professional School in Varnsdorf can simultaneously study the bachelor study program Computer Modeling in Physics and Technics at University in Ústí nad Labem. Exams and credits from the University are recognized by the Tertiary Professional School and enable to shorten the program and receive the bachelor degree together with the title certified specialist. This is also convenient for students who do not want to or cannot from some reason finish the bachelor study at university. All exams and credits will be recognized by the director of Tertiary Professional School in Varnsdorf and student can continue studying at this school in higher grade, which means also shortening of student´ s study program.

3.3 Ideas how to use VQTS model to enhance permeability between VET and HE in the Czech Republic

3.3.1 In the curricula reform

Competence matrix could be used in the framework of the vocational education and training reform process in the Czech. Especially within the curricular reform which was launched by adoption of the new School Act (ACT No. 561/2004 Coll. of 24th September 2004, on Pre-school, Basic, Secondary, Tertiary Professional and Other Education (the Education Act), as amended, which entered into effect on 1st January 2005 with the exception of the provisions of Section 20 (3), (5) and (7) which came into effect on the date of its publication, and with the exception of the provisions of Sections 77 through 79, Section 80 (3) through (10), Section 81 (1) through (8), and Section 82 (3), which shall come into effect on 1st September 2007). Concerning curricula, the so-called two-level curricular concept (national-level and institutional-level curricula) is being prepared at the educational levels ISCED 1 to 3 (and partially 4), with national Framework Educational Programmes and institutional School Educational Programmes in each of regular fields of initial formal E&T including IVET programmes of the ISCED 3A type (completed by the Maturita examination and school-leaving certificate) and the

ISCED 3C type (completed by the so-called Final examination with or without apprenticeship certificate). Of course, the two mentioned types of final examinations (and leaving certificates) also had to be adapted to the two-level curricular structure in order to reflect – within the summative assessment – both its national-level common part and its school-level particular part (differing from one to another school in dependence on school educational programmes where schools' pedagogical specifics and learners' options as well as relevant employers' requirements and/or labour market needs can be reflected). **Competence matrix** could be used both in the process of school educational programs development and in preparation and realization of Final Apprenticeship examination and Maturita examination. Also Europass documents for graduates of secondary technical schools and secondary vocational schools provide a convenient possibility how to use competence matrix.

3.3.2 For transfer and recognition of competences acquired within the formal system

The new School Act enables higher and better permeability between individual educational levels (between secondary technical school and secondary vocational school) as well as horizontal permeability. The new School Act No. 561/2004 Coll. (effective from 1st January 2005) increased permeability within the initial education system, as it made the education pathways more transparent and introduced the possibility for school heads to recognise and make exemptions for acquired parts of education programmes. This Act provides an initial solution to the issues of increasing mobility both within and between VET and general and/or higher education. It contains certain provisions that facilitate transfers between all educational programmes and shorten ways to qualifications. In admission and progression proceedings, school directors are enabled to recognise prior both formal and non-formal education as well as informal learning and make exemptions for the recognised parts of study. Although recognising education acquired elsewhere is not based on objective criteria, a credit system, etc., it may be expected that these provisions will at least partially facilitate transfers within initial and between continuing and initial education. It provides and opens the space for use of the **competence matrix** in the future. The new Education Act uses recognition of 'education' (where 'knowledge, skills and competences' are defined, if ever, only in framework of the curricula) as a primary concept. For the upper secondary level of education, the new Education Act stipulates conditions for recognition of the applicant's prior education in case of enrolment during the course of studies (e.g. when transferring from one programme or school to another) or re-entering in a discontinued one (e.g. after its interruption or leaving). For upper secondary and non-university tertiary levels of education, it stipulates also conditions for passing the so-called individual examinations (that is exams covering parts of the Final examination or Maturita or Absolutorium) in the framework of further education of the adult population provided by upper secondary schools or tertiary professional schools. Potentially, individual examinations can be taken without preceding participation in a preparatory course. For detailed conditions see Section 113 of the Act. Obtaining certificate(s) on having passed such partial

exam(s) can be sometimes helpful in maintaining or seeking for a job and/or in access to subsequent education. However, the full qualification in the given field and the corresponding educational level (without which access to subsequent education at a higher level or complementary CVET at the same level of qualification is impossible) cannot be attained by mere accumulation of all constitutive partial certificates. For this, the respective complex examination (the Final examination or Maturita or Absolutorium) must be subsequently passed moreover, anyhow. This is perhaps main reason why this way of obtaining full qualifications is, in fact, scarcely used (it is too complicated, if not impracticable both for applicants and schools, the head teachers, esp. of public schools, being moreover afraid of being blamed by school inspectors for their possibly incorrect specifying the procedure and tools of recognition).

3.3.3 For transfer and recognition of competences acquired through non-formal or informal learning

The Act No. 179/2006 Coll. on the Recognition of Further Education Results (effective from 1 August, 2007) stipulates the creation of a National Qualifications Framework and the system of recognition of prior learning regardless the ways of their acquirement. The Act foresees a possibility for adults to acquire partial vocational qualifications registered within the NQF, through an examination to compare an individual's prior learning results with qualification and assessment standards of respective partial vocational qualifications. It is not possible, however, to gain complete qualifications through these procedures of validation of prior learning; in addition, the same complex final examinations as in initial formal VET are required for their obtaining. **The competence matrix – in the framework of the Act.No.179/2006 would be usable only in case if there would exist so called 'recognition of evidence'. Foreign educational systems use as a proof e.g. acknowledgment of competences acquired within the practice (at work)- which is a document provided by employers or a video recording of the working activity, etc. The competence matrix might be included into a list of such proofs and a candidate would not have to prove all competences required by the assessment standard, only those competences that would not be the part of the competence matrix. This procedure would meaningfully reduce examination costs and shorten the length of examination.** Provisions of the new School Act and the implementation of the Act on the Recognition of Further Education Results improve opportunities for individuals to increase mobility within and between VET and general and/or higher education both during their initial formal schooling and their lifelong (and life-wide) learning.

3.3.4 Permeability between higher professional schools and bachelor study

For the last 12 years, **higher professional schools** have been operating, providing education at ISCED 5B level. Most of them were established at secondary

technical schools and, together with them, form one legal entity. The objective of higher professional schools is to offer students the opportunity of obtaining a vocational qualification for the performance of demanding professional activities, or of enhancing the qualification they have already achieved. **Permeability between higher professional schools and university- bachelor study program is possible only if an agreement exists between the respective higher professional school and respective university (or higher educational institution) on recognition of study program and learning (study) outcomes from a higher professional school. In case that such agreement exists, the graduate of a higher professional school can acquire a bachelor´ s degree after one year of study. If not, the graduate has to go through the whole bachelor study program (usually 3 years) without any possibility of shortening the length of study. The competence matrix could be useful for making visible the competence profile of a graduate.**

4 Example from Germany

Matthias Becker, Knut Behnemann, Dietmar Post, Ove Ramm, Georg Reuters

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4.1 General overview

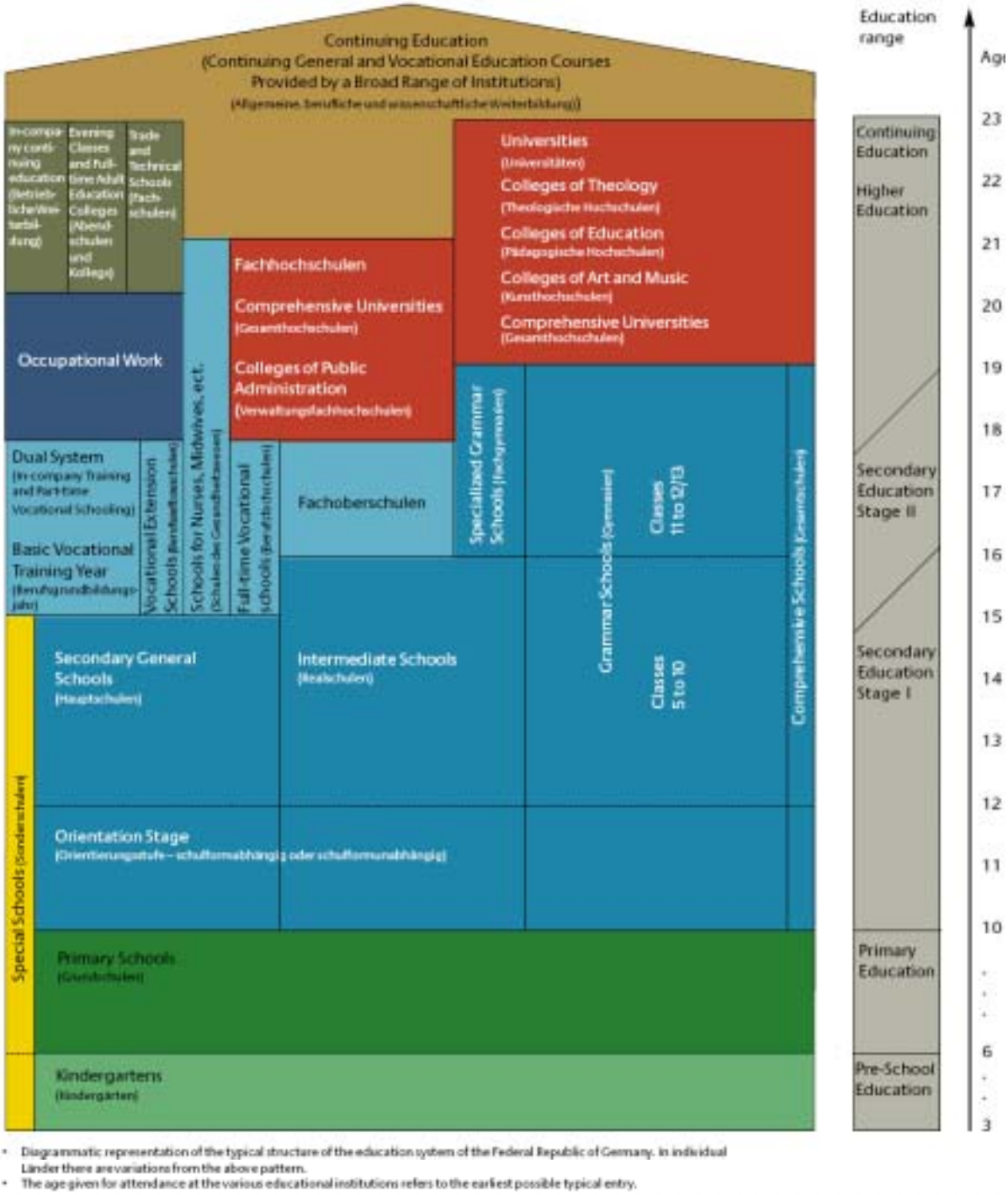
4.1.1 The Education System in Germany

There is hardly any country where the permeability between VET pathways as well as between VET and HE is marked by the structures and regulations of the educational system as strongly as in Germany. The place value of degrees and institutionalized education play a decisive role for the regulation of this permeability.

In principle, the educational system in Germany has a consistent structure which, however, only gets transparent after studying several sources on it:

- The Federal Ministry of Education and Research (BMBF*)* represents the German educational system with the overview of
- Figure *4.1* (cf. http://www.bmbf.de/pub/bildung_in_deutschland.pdf) In addition a regular education report is published which also - together with detailed information - informs about the permeability of the educational system in Germany (cf. www.bildungsbericht.de). The possible transitions from VET to HE are not immediately detectable from the overview, though and moreover, these transitions have developed very dynamically within the last few years. This is not least due to the widespread responsibility for the 'education' which is not incumbent to the federation but the federal states of Germany (independence in matters of education and culture of the federal states).
- To guarantee nationwide uniform standards and a sufficient degree of things in common for the processes of education, the Standing Conference of the Ministers of Education and Cultural Affairs of the federal states in the Federal Republic of Germany (short: Conference of Ministers of Education or KMK) was founded. The KMK is an association of the ministers or senators of the federal states responsible for education, universities and research as well as cultural matters . The Conference of Ministers of Education has set up a synopsis which shows how in the single states the transition to HE can be managed for potential students without a regular study authorization (achieved at schools) (cf. http://www.kmk.org/hschule/Synopse2007.pdf). This is particularly relevant for persons in employment and with curriculum vitae primarily based on professional experience. The KMK furthermore gives recommendations and sets agreements as well as standards regarding VET as well as HE.
- The European platform *PLOTEUS* (http://europa.eu.int/ploteus) helps education seekers to find the necessary information about the educational system; here the individual states of Germany present their paths of education separately. A similar illustration by the BMBF with a synopsis of the educational system published by the KMK every year in coordination with the federation and the German federal states in the context of the 'information network to the education system in Europe' (EURYDICE) is found under http://www.kmk.org/doku/bildungswesen.htm It describes the responsibilities, structures and also current developments in the education policy.

Figure 4.1: Basic Structure of the Education System of the Federal Republic of Germany



- Diagrammatic representation of the typical structure of the education system of the Federal Republic of Germany. In individual Länder there are variations from the above pattern.
- The age given for attendance at the various educational institutions refers to the earliest possible typical entry.

Altogether, the transitions from VET to HE are so heterogeneous that they can hardly be presented in a comprehensive way.

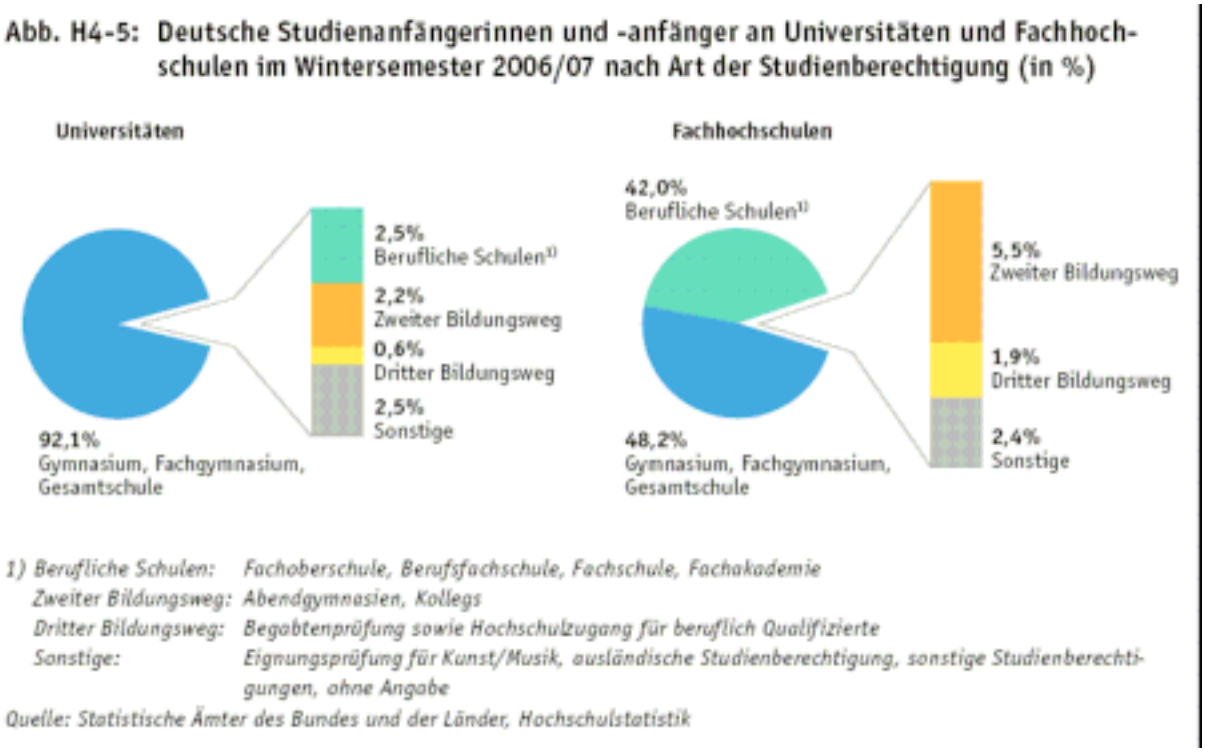
Although the German educational system is accused of a high social selectivity, there is nevertheless a high 'formal permeability' at the same time. From every level of education it is theoretically possible to go to secondary school and university careers even if this possibility is used only marginally in the area of VET. Consequently there is no school and university career below the university in Germany which excludes further formal educational facilities and is designed only for the admission into the world of work. So somebody with a vocational training can go to a FE college even after only a short time of work and achieve

the matriculation standard (FHR) there. The application of ISCED to the German educational system is therefore difficult. ISCED levels, which lead to the direct admission to the labour market (levels 2 C, 3 C and 4 C) can at the same time be qualifications, which correspond to the levels 2A / 2 B, 3 A / 3 B or 4 A/4 B (cf. Figure 4.2).

Figure 4.2: Assignment of the qualifications according to ISCED in Germany (Statistical Federal Office, micro census.)

	ISCED-Level	Bildungsabschlüsse
Low	**Primary Education** (ISCED 1)	Ohne allgemeinen Schulabschluß; ohne beruflichen Abschluß
	Lower Secondary Education (ISCED 2)	1 Hauptschul-/Realschulabschluß/POS; ohne beruflichen Abschluß 2 Hauptschul-/Realschulabschluß/POS; Anlernausbildung, Berufliches Praktikum 3 Hauptschul-/Realschulabschluß/POS; Berufsvorbereitungsjahr 4 Ohne Hauptschulabschluß; Anlernausbildung; Berufliches Praktikum 5 Ohne Hauptschulabschluß, Berufsvorbereitungsjahr
Medium	**Upper Secondary Education general** (ISCED 3A)	Fachhochschulreife/Hochschulreife; ohne beruflichen Abschluß
	Upper Secondary Education vocational (ISCED 3B)	1 Abschluß einer Lehrausbildung 2 Berufsqualifizierender Abschluß an Berufsfachschulen/ Kollegschulen, Abschluß einer einjährigen Schule des Gesundheitswesens
	Post-Secondary Non Tertiary Education general ISCED 4A	1 Fachhochschulreife/Hochschulreife **und** Abschluß einer Lehrausbildung 2 Fachhochschulreife/Hochschulreife **und** Berufsqualifizierender Abschluß an Berufsfachschulen/Kollegschulen, Abschluß einer einjährigen Schule des Gesundheitswesens
High	**First Stage of Tertiary Education** ISCED 5B	1 Meister-/Technikerausbildung oder gleichwertiger Fachschulabschluß, Abschluß einer 2- oder 3jährigen Schule des Gesundheitswesens, Abschluß einer Fachakademie oder einer Berufsakademie, 2 Abschluß einer Verwaltungsfachhochschule 3 Abschluß der Fachschule der ehemaligen DDR
	First Stage of Tertiary Education ISCED 5A	1 Fachhochschulabschluß (auch Ingenieurschulabschluß, Bachelor-/Masterabschluss an Fachhochschulen, ohne Abschluß einer Verwaltungsfachhochschule) 2 Hochschulabschluß (Diplom (U) und entsprechende Abschlussprüfungen, Künstlerischer Abschluss, Bachelor-/Masterabschluss an Universitäten, Lehramtsprüfung)
	Second Stage of Tertiary Education (Research Qualification) ISCED 6	Promotion
	ISCED 9	Keine Angabe

Figure 4.3: First semester students in Germany differentiated by their educational pathways (cf. education report 2008, p. 176)



The ‘classic transitions’ of the secondary school level II (ISCED 2, 3 and 4) to the university level meanwhile develop very dynamically and individually in the context of state-related pilot projects and experiments. The classic and traditional way of transition to the university, comprehensive university or university of applied sciences is the one from the German ‘Gymnasium’; transition from ISCED 3 A to 5 A).

92.1% of first semester students at universities have the ‘Abitur’ as matriculation standard which was achieved at a secondary school (Gymnasium), special secondary school (Fachgymnasium) or a comprehensive school (cf. Figure 4.3). On the other hand, these students make up only 48.2% at universities of applied sciences, while the other half has achieved their matriculation qualification in the area of VET.

Altogether, 17% of the persons qualified for HE in 2006 had a completed vocational training (cf. education report 2008, p. 170). After completion of the studies approx. 28% of the graduates of the universities at the same time also have a completed nonacademic vocational training (cf. professional formation report 2008, p. 105). At present, the direct permeability of the VET to the HE still is of marginal importance, though. Therefore the initiative ANKOM was started, which should examine and promote the transfer of credits of professional competences to university courses (cf. http://ankom.his.de).

4.1.2 Formal Ways from VET to HE

In principle there are three models of acknowledging (in a broad sense) competences from the area of the professional education and particularly the competences achieved by professional experience for HE:

- Access to university studies
- Granting access to the university for graduates without formal higher education entrance qualification (Abitur) by entrance examinations, rehearsal studies or individual regulation.
- Acknowledgement of professional education as an equal studies entitling degree.

Giving credits for professional competences with regard to HE

Up to 50% of a higher education can be replaced by knowledge and abilities which have been acquired outside the university system (cf. KMK 2002).

The 'value' of VET in view of HE is increased by measures which simultaneously combine vocationally orientated degrees without formal HE entrance qualification with degrees of general educational orientation with a formal HE entrance qualification.

Combination of courses of VET and university studies

A third model are dual studies (Duales Studium, Triales Modell) which combine vocational training and university careers.

Entrance examination, test studies, individual regulation

The university entrance by means of entrance examination, sample studies or individual regulation is regulated differently in every federal state and also differently from university to university. Depending on the regulations persons with a completed VET and professional experience can enrol for university studies particularly when being in possession of a master craftsman's certificate (so-called 'master studies'). The synopsis of the KMK (2007) gives information about the way of the different regulations.

The special university access for qualified professionals is regulated by an ordinance in North Rhine-Westphalia, for example. Similar ordinances exist in other federal states.

'The following groups are accepted as applicants to the studies in a technically corresponding course at universities of applied sciences:

1 Masters according to the law of professional education and the crafts code,

2 graduates of two-year technical trainings at the FE colleges,

3 business administrators and management assistants and

4 geriatric nurses qualified in accordance with § 2 of the further education law (NRW 2003, § 1)'.

Acknowledgment as an equal degree

Besides the courses of VET leading to a university career (cf. Table 4.1; Enabling the study access) there is an increasing number of courses which combine a vocational training with the abitur or the matriculation standard in the dual system. Thus pilot projects are generally carried out in the federal states or the structure of the VET (at colleges) tailored so that a studies entitling degree is made possible (Berufskolleg).

Type of school	*Qualification*	*Duration;remarks*
Berufsfachschule	Entitlement to studies at the university of applied sciences (FHR)	3 years, several types, regulations by the KMK (2001)
Berufsoberschule	subject-linked university entrance qualification Matriculation standard (Abitur) (if a second foreign language has been chosen by the student)	2 years with a vocational training preceding
Fachgymnasium	Matriculation standard (Abitur)	3 years
Berufliches Gymnasium	Matriculation standard (Abitur)	3 years, is the successor of the Fachgymnasium
Fachoberschule	Entitlement to studies at the university of applied sciences (FHR)	2 years with a vocational training preceding
Fachschule	Entitlement to studies at the university of applied sciences, if the standards of the KMK (2001) are heeded (FHR)	2 years, other types possible

Table 4.1: Formal pathways which lead to HE (regulations determined by the federal states)

Accreditation of competences

The combination of an apprenticeship with lessons at the technical college leading to the matriculation standard still has experimental status. Either this combination is termed 'double qualifying vocational training' (degree in Germany: Entitlement to studies at the university of applied sciences) or called 'vocational training with abitur' (general matriculation standard). Some vocational colleges offer such degrees in combination with certain apprenticeships. So the 'dual vocational training with matriculation standard for the university of applied sciences' (DBFH) is offered in Bavaria, where the necessary competences for the entitlement to studies at the university of applied sciences are achieved by attending the Fachoberschule for half a year taking into account that the participating students achieve the vocational qualification within two and a half years in compact form.

As a rule, in other federal states a training period of 4 years is standard for a double qualifying education. The countries determine the college locations and the combination possibilities with certain vocational trainings.

One example from NRW:
http://www.schulministerium.nrw.de/BP/Schueler/Studium_und_Beruf/Beruf/BerufsausbildungUndMehr/BerufsausbildungFHR/index.html#A_9;

One example from Bavaria:
http://www.stmuk.bayern.de/imperia/md/content/pdf/schulen/liste_der_berufe_und_betriebe_f_r_dbfh_2007_08.pdf).

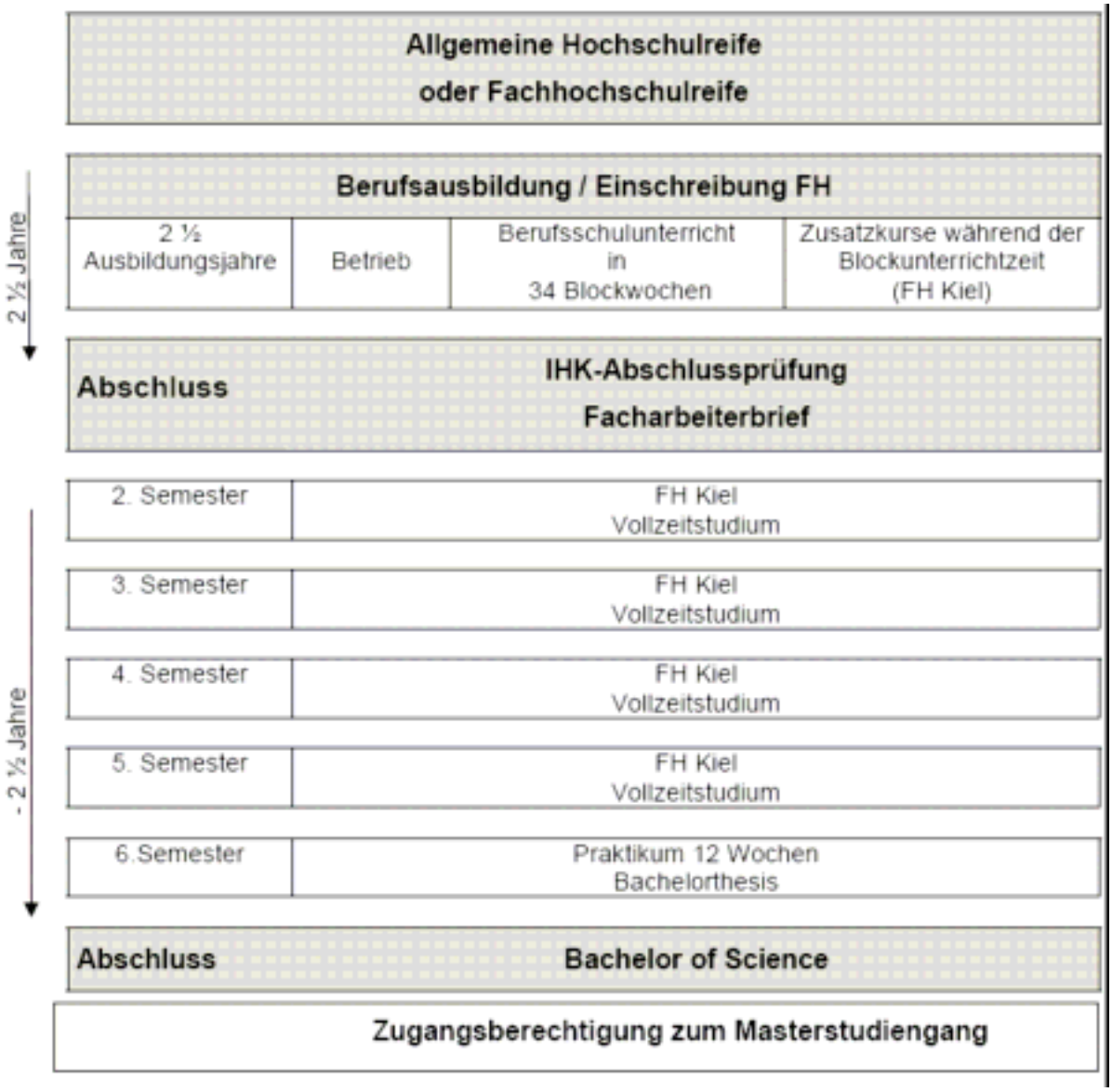
In Berlin the upper school centre information and medical engineering (OSZ IMT since the school year 2003/04) offers a course 'vocational training plus abitur' within 4 years in cooperation with Deutsche Telekom AG as a ministerial test run.

The studies and exam regulations of the universities can and should credit professional competences (cf. KMK 2002) for an HE career. The type of the accreditation is regulated in the various studies and exam regulations of the universities. The accreditation of competences is of special interest for the application of the VQTS model and is discussed in chapter 2 with the description of cases.

Combination of courses of vocational training and university careers

So-called dual courses of studies have been developed and offered particularly in the sector electrical engineering within the last few years and often under cooperation of the chambers. Dual courses of studies combine an HE with an apprenticeship. The studying place technical college can also be replaced by the university. Because of the cooperation of the three studying places enterprise, technical college and university (mostly university of applied sciences, partly also professional academies) this model is then also called 'Triales Modell' or training-integrated course of studies. One example of a 'Triales Modell' is a course of studies at the university of applied sciences (FH) Kiel (cf. Figure 4.4).

Figure 4.4: 'Triales Modell' of the FH Kiel in cooperation with Berufliche Schule in Kiel-Gaarden and IHK-enterprises



The FH Kiel combines the apprenticeship as an IT system electronics technician or as a computer specialist with a special HE course of studies 'Internet Science and Technology'. The professions 'IT system electronics technician' and 'computer specialist' belong to the 4 newly-created apprenticeships/professions (since 1997) in the IT area that require a three-year training period. The course of studies 'Internet Science and Technology' is a 6-semester bachelor course of studies. The university of applied sciences, the technical college and enterprises represented by the chamber of industry and commerce (IHK) are involved in this 'Triale Modell'. With that it is made possible for school leavers with abitur to first begin an apprenticeship and partly simultaneously obtain the bachelor of Science in shorter time (altogether 5 years instead of 6) . More information under http://www.fh-kiel.de/index.php?id=3527.
The information portal 'education plus' lists currently 84 dual courses of studies in the area of electrical engineering in Germany (updated 20/06/2008), which

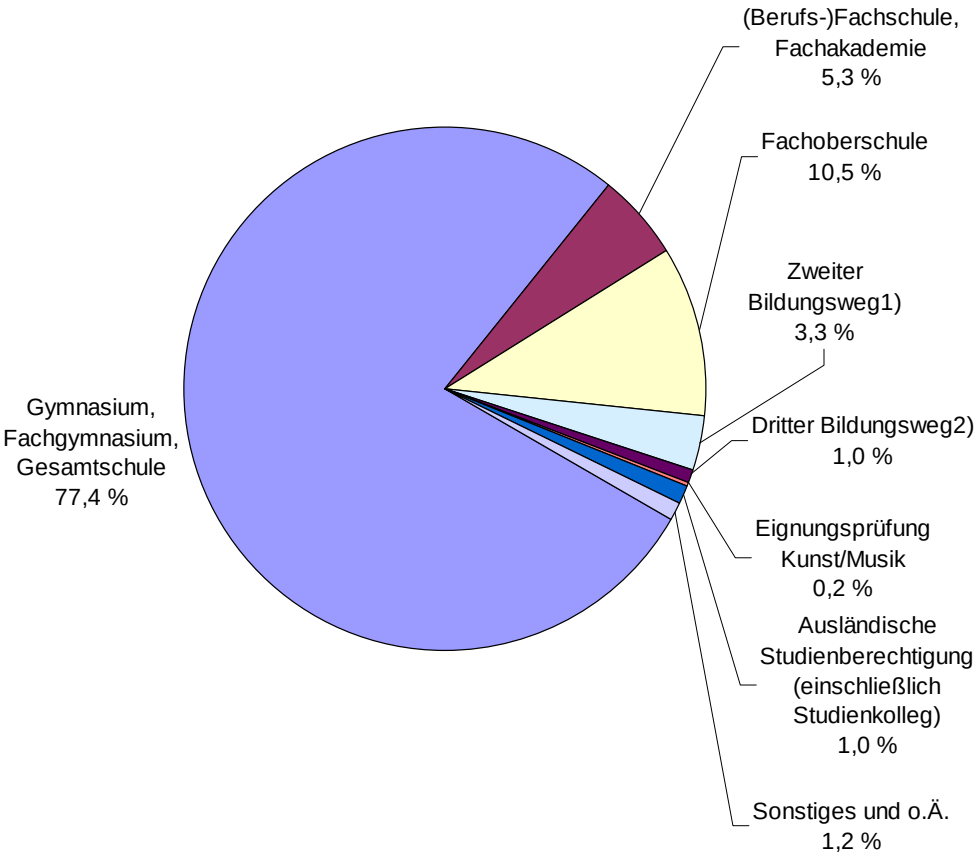
makes clear the increasing significance of this dovetailing of apprenticeship and HE (cf. http://www.ausbildungplus.de).
The manner of the dovetailing of VET and HE is quite diverse. Common to all models is a shortening of the vocational training to two or two and a half years maximum and as a rule a shortening of the lessons time at the technical college or the replacement of this time in favour of the student days. The on-the-job training parts are predominantly carried out during the university vacation time. Thus the training period is shortened.
Some federal states have declared this type of dovetailing a preferential model in form of a training offensive, so e.g. in Hesse (cf. http://www.dualesstudium-hessen.de/) and Rhineland-Palatinate (cf. http://dualesstudium.rlp.de). Dual studies are defined as a profession-integrating HE if they are carried out on the job that is after conclusion of an apprenticeship. The older publication of the commission of the States in the Federation about the dual studies informs about the basic approaches (cf. BLK 2000).

4.2 Cases

4.2.1 General description and background

In paragraph 1 it became apparent that the formal pathways from VET to HE have been expanded by a variety of single models, regulations and ministerial pilot projects. Nevertheless the permeability of the VET to the HE is only very low . Only 1.094 (0,25 %) of the 445.427 graduates of the technical colleges in the year 2006 obtained a special entitlement to studies at the university of applied sciences (cf. Statistical Federal Office, special series 11, publication series 2) and only 4.3% of all undergraduates have acquired their HE entrance qualification via the second (night school, 'Kolleg') or third formal pathway channel (undergraduate without higher education entrance qualification achieved at school) (cf. Figure). The undergraduates matriculated through a professional training are also subsumed under 'third pathway channel'. An analysis of the BLK concludes that nationwide on average considerably less than 1 per cent (state data: 0.7 to 0.8%; StaBuA 0.3 to 0.5%; ZVS: 0.2%; HIS: between 0.6 and 0.8%; Scientific council: 0.25%) can begin the undergraduate studies due to their VET. (BLK 2005, p. 3)

Figure 4.5: Undergraduate to universities in Germany according to the type of higher education entrance qualification (source: Education report 2008, table H4 3 A.)



Cases in which there are intersections between sector-related contents from the VET and HE which, till now, could not be accredited are of special interest in the project VQTS-II, in which a special focus has to be put on the sector electrical engineering/electronics. Focussing on electrical engineering/electronics as a domain means that professional competences for the mastery of work tasks (core work tasks) are in the centre. Particularly such professional competences are therefore relevant, independent of where they were obtained, which are in connection with professional tasks (professional decision-making and responsibility). This includes particularly competences which were developed during professional work. The professional experience and the hereby connected, rather informal, studying forms can only be made visible by contents-related descriptions of the professional competences. A formal description of educational pathways is not useful here. This can neither be formally described by descriptors (Knowledge, Skills, Competences) because the context remains undefined where the professional competence is or can be effective. A grading by levels neither changes this. The European qualification framework (EQF) and a national qualification framework (NQF) in this respect deliver only clues about the value of qualifications.
A first attempt to tackle these difficulties is to describe the acquisition (process) as well as the formal (qualification) and the content-related (for the execution of professional tasks) significance of competences for the HE by describing individual careers.

4.2.2 Description of the Cases / Analysis of Vocational Biographies

Two graduates of the Fachschule für Technik (college of further education at the Eckener-Schule, Flensburg) were selected, whose careers are exemplary and therefore favourable to career analyses. These graduates followed different pathways; so their interviews helped to determine the 'value' of professional competences for HE exemplarily in the area of electrical engineering.
The analyses of vocational biographies were carried out in form of interviews. The persons asked were former students of the above mentioned FE college in the field of study electrical engineering/main emphasis process automation and are at present students of the university of applied sciences in the bachelor course energy systems engineering.
Formally, FE college graduates have the choice between enrolling for bachelor studies at a university of applied sciences or beginning a career as technician. In most cases the second option is preferred because of the attractive career prospects (medium management level). Studying as the alternative way is only taken up by few (about 3% of graduates at the Fachschule für Technik und Gestaltung (college of further education at the Eckener-Schule, Flensburg). Interesting enough there are subject congruencies between the vocational further education (technician course) and the studies of a bachelor of engineering.

Career information
The first person interviewed (B1) is male and was born in 1978. He achieved the high-school diploma (Realschulabschluss) in 1996. In 2000 he finished an apprenticeship with the double qualification of becoming a skilled electrical

assistant (ETA, qualification of the Berufsfachschule, ISCED 3B) and getting the HE qualification („Fachabitur', ISCED 3B) and then was professionally working for 10 months in the area of examining electronics in the field of telemetry for gas monitors as well as 4 months as ETA. He simultaneously attended an evening course electrical engineering - automation at a technicians' college. In 2002 a six-month job as worker in the sales department abroad followed.

- He successfully passed the exam after the two-year course electrical engineering - process automation at the technical college of further education in summer 2005. Since autumn 2005 he has been enrolled as student at the university of applied sciences in energy systems engineering (BA).
- The second person asked (B2) is male and was born in 1980. After the high-school diploma in 1997 (ISCED 2) he completed a three and a half year apprenticeship as energy electronics technician in the field systems engineering (ISCED 3C). With an interim professional practice as energy electronics technician and the completion of the national service he attended the technical college of further education Flensburg in the field of study electrical engineering - process automation from summer 2003 until summer 2005. Since autumn 2005 he has been enrolled as student at the University of Applied Sciences Flensburg in energy systems engineering (BA).

The people interviewed (B1 and B2) have attended the same courses and fields of study at the Technical College of Further Education and University of Applied Sciences.

Synopsis Technical College of Further Education and University of Applied Sciences

The persons B1 and B2 have gone to the same studies places and fields of study in the FE college and at the university of applied sciences. With the curricula of the technical college of further education and the course of study of the University of Applied Sciences, at first a formal comparison of emphases as regards content can be carried out. It has to be noted that some contents (English, electrical engineering, electronics, mathematics, natural sciences, and business administration) do not build exclusively on each other but often show coincidences.

'The base competences in electrical engineering, mathematics and physics are an important component of the first study terms. Then the foundation is laid upon which technically specified lectures will follow in later terms.' (From: Information about enrolment and studying, University of Applied Sciences Flensburg, 2008)

In the interviews the following statements concerning the acknowledgment and significance of competences from the professional area could be gained.

B1:

At the Flensburg Technical College of Further Education neither the higher education entrance qualification (Fachabitur, ISCED 3B) nor the one-year attendance of the technician school in the same field of study – both achieved in a different federal state (Bundesland) – were acknowledged.

An acknowledgment of qualifications achieved at the technical college of further education was not applied for and therefore not granted. An acknowledgment can only be executed - so the statement of B1 - by the respective professors. Furthermore should in his opinion the technician or master courses be provided

with credit points and be tied in the EQF system. However, this probably is not the case.

B1:
In principle, the technical college of further education and the university of Applied Sciences are distinguished by B1 in their way of dealing with the students. The technical college of further education takes the students by the hand and leads them in their course community in a compactly organized further education within two years towards a degree. The motivation is mainly generated by the teaching style.
On the other hand, the University of Applied Sciences demands the autonomous studies of the single student. This attitude prepares the student for a future career as engineer. The motivation is the will to do and to be better than the other students. Otherwise the student gets little support by the lecturers of the university of applied sciences.

FE College of Design and Technology Flensburg FE college (Fachschule) Field of study ***power engineering and process automation***				University of Applied Sciences Flensburg University of Applied Science (Fachhochschule) Field of study ***energy systems engineering*** (BA.)		
1. Sem.	2. Sem.	3. Sem.	4. Sem.	1. Sem.	2. Sem.	3. Sem.
German/com-munication (30 lessons)	German/com-munication (30 lessons)	German/com-munication (30 lessons)	German/comm unication (30 lessons)			
Mathematics (60 lessons)	Mathematics (60 lessons)	Mathematics (60 lessons)	Mathematics (60 lessons)	Mathematics 1 (64 lessons)	Mathematics 2.1 (64 lessons)	Mathematics 2.2 (64 lessons)
				Mathem. + techn. SW-tools (64 lessons)		
English (40 lessons)	English (40 lessons)	English (40 lessons)	English (40 lessons)	English 1 (32 lessons)	English 1 (32 lessons)	
Electrical engineering (100 lessons)	Electrical engineering (100 lessons)	Energy and drive electronics (100 lessons)	Energy and drive electronics (100 lessons)	Electrical engineering (64 lessons)	Electrical engineering 2.1 (64 lessons)	Digital technology (64 lessons)
		Energy technical systems (120 lessons)	Energy technical systems (120 lessons)	Electrical engineering (64 lessons)	Electrical engineering 2.1 (64 lessons)	Electrical engineering 2.2 (64 lessons)
Natural sciences (40 lessons)	Natural sciences (40 lessons)	Natural sciences (40 lessons)	Natural sciences (40 lessons)		Physics 1 (64 lessons)	Physics 2 (64 lessons)

Electronics (80 lessons)	Electronics (80 lessons)				Measuring technique (64 lessons)	Electronics 1 (64 lessons)
Business administration (80 lessons)	Business administration (80 lessons)	Quality management (40 lessons)	Quality management (40 lessons)	Business Administration (32 lessons)	Law (32 lessons)	
Economy/ politics (40 lessons)	Economy/ politics (40 lessons)					
Technical communi-cation (60 lessons)	Technical communi-cation (60 lessons)	Technical information technology (100 lessons)	Technical information technology (100 lessons)	Electronic data processing (64 lessons)		
		Automation engineering (100 lessons)	Automation engineering (100 lessons)			Control engineering (64 lessons)
520 lessons	**520 lessons**	**640 lessons**	**640 lessons**	**384 lessons**	**384 lessons**	**384 lessons**

Table 4.2: Curriculum analysis: Comparing the syllabuses of the FE college and the university of applied sciences

Some examples for the differences were given by B1:

- At the University of Applied Sciences Flensburg English is restricted to learning technical words whereas at the FE college Flensburg the focus was on the language itself.
- The subject electrical engineering are to the effect different that rudimentary formulae are applied practice-related at the technical college of further education whereas at the university of applied sciences the theoretical basis is the centre.
- Mathematics lessons at the technical college of further education target at an equalization of the different mathematical prerequisites on the part of the students and is brought with simple examples only up to the integral and differential equation. The lectures are right from the start more abstract and more demanding at the university of applied sciences.
- The automation engineering at the technical college of further education could be taken as a very good basis for the studies at the university of applied sciences.
- The area of technical computer science was lined up too little object-oriented unlike at the university of applied sciences.

In the case that the obligatory prerequisite to the BA studies had been part of his professional biography already he would not have attended the technical college of further education.
With regard to the acknowledgment of qualifications achieved at the technical college of further education B2 quoted the remark of the student office that the technical college of further education is a good prerequisite for the successful visit of the university of applied sciences.

The person B2 exemplarily referred to similar contents in the two study places in the areas of electronics, machine technology, robot technology and automation engineering. The electrical engineering is on the other hand considerably different at the two study places since at the university of applied sciences the theoretical considerations and deductions are at the centre of studies.
In retrospect the standard in the areas of mathematics and natural sciences should get more demanding at the technical college of further education since only the infinitesimal calculus was reached or in natural sciences the learning contents remained rather superficial. With regard to the preparation for the university of applied sciences the complex calculation should be taught at the technical college of further education. The English lessons were by far better and more effective at the technical college of further education. The business administration lesson at the technical college of further education showed a clear and comprehensible structure unlike the lecture at the university of applied sciences. The programming served as a good preparation for the special higher education. All in all, the technical college of further education offers very good auxiliary modules like this master business administration course.
According to B2 technical college of further education is a place where studying is fun again and at which one is taken by the hand as a student. There was no stress and the entire organisation was well-adjusted. However, at the university of applied sciences the tuition is rather bad in comparison and a lot of information is not spread properly to the students or some essential facts are not clear to every student, e.g. the new exam regulations.
The person B2 otherwise sees the technical college of further education as a good preparation for the studies at the university of applied sciences. Without the technical college of further education he would not have got the formal prerequisite (matriculation standard) and likewise the desire to study again.
Both persons are characteristic for the broad range of transitions between the German Fachschule and the Fachhochschule (cf. Fig. 4.1). The bottom line of the interviews is that B1 would have chosen the direct access to the university if the obligatory prerequisite to the BA studies had been part of his professional biography already before he attended the FE college. B2 noticed during the university studies

- the similar and overlapping contents at the two study places

and also that

- the cross-linkage of theory and practice and
- the training of learning and working techniques

at the FE college were not only an ideal preparation for the university studies ,but also broaches the question of credit transfers. Also the strong practice-orientation of the FE course which leads to a future career of those graduates on a par with engineers makes the current discussion about the ranking of the technicians' degree an urgent matter.

4.3 Using the VQTS model

The career-related analyses make clear that formal designations and level assignment make little meaning for determining the value of professional competences for HE. On the other hand, a content-oriented VQTS matrix would make the competences more transparent particularly in the areas of electronics, electrical machinery, robot technology and automation engineering so that these could more easily be taken into accreditation.
According to the interviews which were not carried out in a representative dimension the competences achieved at the technical college of further education in business administration and in English seem to be of the same or even higher quality as those of the university of applied sciences. The value of the acquired knowledge for the professional competence as a state certified technician or also as an engineer does not get clear in the two cases. An integrated description which brings such knowledge in connection with professional tasks could offer advantages for both courses (technical college of further education and university of applied sciences likewise). A VQTS matrix would clearly improve the grading of such knowledge.
The VQTS model can be hardly used for the transfer of professional competences to the university area with regard to the 'mobility method' developed in VQTS I because completely different mechanisms are relevant here as between institutions of the vocational training only. However, the identification of contents-related overlapping between contents of VET and contents of HE in an organisation profile can be used to be able to determine the accreditation with credit points also quantitatively.
The quality of the competence descriptions in the competence matrix proves to be once more a key to raising the transparency and the regulation of creditable qualifications in the transition from the vocational training to the higher education. The competence model lying behind this must take into account different areas of employment (market for qualified employees, labour market of university graduates) as well as different result expectations (output/outcome) of vocational courses and courses of higher education. This will represent a major challenge for the further development of the VQTS model.

4.4 Reference

Berufsbildungsbericht (2008): Der Berufsbildungsbericht 2008. Vorabversion. Bonn: BMBF.

Bildungsbericht (2008): Bildung in Deutschland 2008. Ein indikatorengestützter Bericht mit einer Analyse zu Übergängen im Anschluss an den Sekundarbereich I. Autorengruppe Bildungsberichterstattung im Auftrag der Ständigen Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland und des Bundesministeriums für Bildung und Forschung.

BLK (2000): Duales Studium – Fachtagung der BLK 'Duales Studium – Erfahrungen, Erfolge, Perspektiven' am 2./3. November 1999 in Wolfburg. Materialien zur Bildungsplanung und zur Forschungsförderung, Heft 78, Bonn.

BLK (2005): Hochschulzugang für beruflich qualifizierte. BLK-Bericht vom 20.01.2005.

KMK (2001): Vereinbarung über den Erwerb der Fachhochschulreife in beruflichen Bildungsgängen. Beschluss der Kultusministerkonferenz vom 05.06.1998 i.d.F. vom 09.03.2001.

KMK (2002): Anrechnung von außerhalb des Hochschulwesens erworbenen Kenntnissen und Fähigkeiten auf ein Hochschulstudium. (Beschluss der Kultusministerkonferenz vom 28.06.2002)

KMK (2007): Synoptische Darstellung der in den Ländern bestehenden Möglichkeiten des Hochschulzugangs für beruflich qualifizierte Bewerber ohne schulische Hochschulzugangsberechtigung auf der Grundlage hochschulrechtlicher Regelungen. Stand: Oktober 2007.

NRW (2003): Verordnung über den Zugang zu einem Fachhochschulstudium für in der beruflichen Bildung Qualifizierte vom 13. Januar 2003.

Schroedter, J.-H.; Lechert, Y.; Lüttinger, P.: ZUMA-Methodenbericht 2006/08: Die Umsetzung der Bildungsskala ISCED-1997 für die Volkszählung 1970, die Mikrozensus-Zusatzerhebung 1971 und die Mikrozensen 1976-2004, (Version 1). Mannheim: Juni 2006.