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Intellectual Output 1 – National surveys

Germany

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Erasmus+


Westsächsische Hochschule Zwickau
University of Applied Sciences

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Intellectual Output 1 – National Survey Germany

P4 - Westsächsische Hochschule Zwickau

Content

I. Survey

1 Summary

1.1 In German

1.1.1 Trialer Studiengang Elektrotechnik

A) **Best Practice Typ:** ein trialer Studiengang "Elektrotechnik" an der Westsächsischen Hochschule Zwickau

Lernpfad: das Konzept beinhaltet drei Abschlüsse innerhalb von 10 Semestern, d.h. 5 Jahren

Abschlüsse	Dauer	DQR/ EQR Level
Diplom (FH)	Nach 5 Jahren	Level 6 (Diplom Univ. wäre Level 7)
Integrierter Berufsabschluss (HWK)	Nach 2,5 Jahren	Level 4
Integrierter Meisterabschluss	Nach 4 Jahren	Level 6

Während des 1. bis 6. Semesters ist der Studienumfang reduziert auf 18 statt 24 Credit Points pro Semester. Das 7. Semester ist für ein Unternehmenspraktikum vorgesehen. Ab dem 8. bis 10. Semester handelt es sich um ein reguläres Vollzeitstudium mit gegenseitiger Anerkennung der Module aus der Meisterausbildung und dem Studium sowie abgestimmten Lehrinhalten zwischen Studium und der Berufs- und Meisterausbildung.

Gründe für die Auswahl als Best Practice:

1. Es bietet Studenten die Möglichkeit 3 hochwertige Abschlüsse innerhalb von nur 5 Jahren zu erreichen. Dies bedeutet eine immense Zeitersparnis von mindestens 3 Jahren, wenn man die Abschlüsse einzeln erreichen würde.
2. Auf Grund des hohen Bedarfs an Meisterabschlüssen, da mehr junge Menschen sich für ein Studium entschließen, hilft dieses Studienangebot im trialen System dem derzeitigen Fachkräftemangel entgegenzuwirken, besonders im Bereich des Handwerks. Im Vergleich kann man sehen, 1993 gab es noch 208.000 junge Menschen, welche sich für eine Berufsausbildung entschieden haben. 2013 waren es nur noch 139.000.[1]

B) **Lehrmethoden:**

- Studienform: Präsenzunterricht, Teilzeitstudium mit studienbegleitender (Meister-) Ausbildung, durchgeführt durch die Westsächsische Hochschule Zwickau und Handwerkskammer Chemnitz
- Zur Berufsausbildung zum Elektroniker/zur Elektronikerin gehören u.a.:
  - Installieren von Systemkomponenten und Netzwerken
  - Messen und Analysieren
  - Aufbauen und Prüfen von Steuerungen

[1] http://www.welt.de/wirtschaft/karriere/bildung/article139408475/Wie-man-in-fuenf-Jahren-seinen-Baecker-Bachelor-macht.html retrieved on: 4.1.2016

        - Bewerten der Arbeitsergebnisse und Qualitätsmanagement
        - Analysieren von Fehlern und Instandhalten von Geräten und Systemen
    - Durch die Meisterprüfung wird festgestellt, ob das Handwerk meisterhaft ausgeübt, selbständig geführt sowie Lehrlinge ordnungsgemäß ausbildet werden können, die Prüfung besteht aus vier Teilen:
        - Teil I: Die Prüfung der meisterhaften Verrichtung der wesentlichen Tätigkeiten
        - Teil II: Prüfung der fachtheoretischen Kenntnis
        - Teil III: Prüfung der betriebswirtschaftlichen, kaufmännischen und rechtlichen Kenntnisse
        - Teil IV: Prüfung der berufs- und arbeitspädagogischen Kenntnisse
    - Die Ausbildung zum Meister besteht aus praktischer Ausbildung im Betrieb, Präsenzunterricht angeboten durch die HWK an Freitagen und Samstagen, wird z.T. auch im Blockunterricht oder mit Online-Learning angeboten

C) **Beteiligte Institute**: Westsächsische Hochschule Zwickau, Handwerkskammer Chemnitz, lokale Betriebe

D) **Kritische Faktoren**: Der Stundenplan für die Studierenden ist sehr voll. Lehrangebote werden außerdem auch samstags angeboten und als Online-Studium. Außerdem ist das Studienkonzept noch recht neu und daher noch wenig bekannt. Somit können neue Studierende noch nicht viel von erfahrenen Studierenden dieses Programms profitieren. Darüber hinaus gestaltet es sich noch schwierig Unternehmen zu überzeugen, Arbeitsverträge für die Dauer der gesamten Ausbildung von 5 Jahren anzubieten.

E) **Möglichkeiten für zukünftige Entwicklung**: Zum einen sollte sich der Bekanntheitsgrad in den nächsten Jahren erhöhen um mehr Studierende zu generieren. Zurzeit gibt es zwei Studiengänge, die als triales System angeboten werden, Elektrotechnik und Versorgungs- und Umwelttechnik. In Zukunft können noch weitere Studiengänge angeboten werden, zum Beispiel im Bereich der Automobilproduktion oder der Informationstechnologie, welche derzeit stark gefragte Themen sind laut Angaben der Handwerkskammer Chemnitz.

1.1.2 Berufsbegleitender Studiengang: Wirtschaftsinformatik

A) **Best Practice Typ:** ein berufsbegleitendem Studium der Wirtschaftsinformatik in Kooperation mit der Westsächsischen Hochschule Zwickau und dem media project Institut für IT- und Managementtechnologien gGmbH in Dresden.
Lernpfad: das Konzept besteht aus einem berufsbegleitenden Studienangebot mit dem Abschluss des Diplom (FH) innerhalb von 10 Semestern. Dieses Angebot richtet sich speziell an Absolventen von IT-Berufen. Die berufliche Ausbildung und Praxis werden hochgradig anerkannt. Von den regulären 10 Semestern (240 ECTS) werden 3 Semester (72 ECTS) anerkannt. Das heißt in nur 7 Semestern berufsbegleitendem Studium erlangen die Teilnehmer den akademischen Grad eines Dipl.-Wirtschaftsinformatikers und können weiterhin Vollzeit in Ihrem Job tätig bleiben.

Abschluss	Dauer	DQR/ EQR Level
Diplom (FH)	nach 3,5 Jahren	Level 6 (Diplom Univ. wäre Level 7)

Gründe für die Auswahl als Best Practice:
Neben seinem spezifischen Charakter als berufsbegleitendes Studium, bietet das Programm sehr flexible Zulassungsmöglichkeiten an. Es ist nicht nur offen für Absolventen von IT-Berufen, sondern auch für Studienabbrecher. Berufserfahrung kann angerechnet werden und bietet somit eine Verkürzung der Studienzeit. Außerdem bietet es Möglichkeit auch ohne Abitur studieren zu können.

B) Lehrmethoden: Es handelt sich um einen berufsbegleitenden Studiengang, welcher parallel zu einem Vollzeitjob funktioniert. Er besteht zum großen Teil aus Hausaufgaben und Selbststudium und zu einem geringeren Teil aus Präsenzunterricht, welcher üblicherweise freitags abends und jeden zweiten Samstag zwischen 9 und 17 Uhr stattfindet.

C) Beteiligte Institute: Westsächsische Hochschule Zwickau, media project Institut für IT- und Managementtechnologien gGmbH in Dresden

D) Kritische Faktoren: Die Hochschule berichtet von einigen Fällen im Bereich Studentenorganisation in Bezug auf Kontakte und Kommunikation mit den Studierenden. Diese wissen und nutzen offenbar sehr selten die Angebote der Hochschule, wie etwa die Bibliothek oder Online Zugänge. Ein weiterer kritischer Punkt ist die finanzielle Förderung des Studiums durch den ESF. Die Studiendauer überschreitet regulär die zu fördernde Periode des ESF. Daher können die Studierenden nicht genau wissen, ob sie eine zweite Förderung auch bis Ende des Studiums erhalten. Die Studiengebühren sind zwar in voller Höhe steuerlich absetzbar, da i.d.R. bereits ein Berufsabschluss vorhanden ist. Dennoch stellt die finanzielle Belastung für einige Studierenden, die keine ESF Förderung erhalten bis zur Steuerrückzahlung eine Schwierigkeit dar.

E) Möglichkeiten für zukünftige Entwicklung: Da die Mitarbeiter der Hochschule bereits von den Kommunikationsproblemen wissen, ist es vorgesehen, stärker bei Informationsveranstaltungen darauf einzugehen und die Vielzahl an Nutzungsmöglichkeiten der WHZ Angebote bekannter zu machen.

1.2 In English

1.2.1 Three track course of study: Electrical Engineering

F) Type of best practice: three track course of study Electrical Engineering at the University of Applied Sciences Zwickau
Learning pathway: concept: three track course of study, which means students can achieve three degrees within 10 semesters (5 years)

Degrees	Duration	GQF/EQF level
Diplom (FH)[2]	after 5 years	level 6

[2] FH = in German: "Fachhochschule", in English: University of Applied Sciences. In comparison to a regular University, "Fachhochschulen" do not have the right to offer doctoral degrees. In some federal states in Germany, there is the possibility to participate in a cooperative conferral of a doctorate, where both University and University of Applied Sciences professors are appointed to evaluate the doctoral thesis. A Diplom (FH) is EQF/GQF level 6 and a Diplom (Univ.) is EQF/GQF level 7. However, the Bachelor and Master degrees of both institutions are equal.

		(Diplom Univ. would be level 7)
Integrated vocational qualification certified by the local Chamber of Trade (in German: Handwerkskammer)	after 2,5 years	level 4
Integrated master craftsman diploma	after 4 years	level 6

From the 1st until the 6th semester, the work load of the study is reduced (18 instead of 24 Credit Points per semester). The 7th semester is solely reserved for internships for work experiences in the company. From the 8th semester, it is a regular full-time study with mutual recognition of modules from the master craftsman qualification and the study, as well as aligned learning contents between the study and the vocational and master craftsman education.

Reason for the consideration as best practice:

1. It offers the possibility for students to gain 3 degrees within only 5 years. It is an immense saving of time of at least 3 years.
2. Due to the high demand of more master craftsmen degrees because more and more students decide for an academic education only, this study concept helps to solve the current skills shortage, especially in the field of crafts and trades. In comparison: in 1993, 208.000 young people choose a vocational education. In 2013 there were only 139.000 left.[3]

G) Methodologies and Outputs:

- Form of study: attendance courses, part time study, executed by the University of Applied Sciences
- Integrated vocational qualification: it consists of practical work at the local company and theoretical attendance classes at the Chamber of Trade with mainly practical contents.
- Integrated master craftsman diploma: it consists of practical work at the local company and attendance classes executed by the Chamber of Trade on Friday and Saturday or in blocks, with some parts in E-Learning format, but mostly attendance classes

H) Involvement of players:

University of Applied Sciences Zwickau, Chamber of Trade (in German: Handwerkskammer), a local company for the practical work experiences

I) Critical factors and weaknesses:

It is a very full time schedule. Additionally, in comparison to dual study courses, it is still a very new program, thus the degree of popularity is not very high yet. Furthermore, companies often do not easily want to sign work contracts for a 5-years period.

[3] http://www.welt.de/wirtschaft/karriere/bildung/article139408475/Wie-man-in-fuenf-Jahren-seinen-Baecker-Bachelor-macht.html retrieved on: 4.1.2016

J) Opportunities for future development:

The degree of popularity should be increased in the future. There are currently 2 study programs (Electrical Engineering, and Supply and Environmental Engineering). The study offers could be extended to achieve a higher variety for students, to attract more students. For example, the branches of automobile engineering and information technology are currently of high interest among students.

1.2.2 Extra-occupational study course: Business Informatics

A) Type of best practice: This program is an extra-occupational study course of Business Informatics, as a collaborative study program of the University of Applied Sciences Zwickau and the media project Institut für IT- und Managementtechnologien gGmbH in Dresden (Germany).

Learning pathway:

concept: an extra-occupational study course of Business Informatics with a Diplom (FH) degree within 10 semesters (5 years). It specifically addresses graduates of vocational trainings in the field of Information Technology. The vocational education and practical experiences can profoundly be accredited, which allows a recognition of 72 ECTS (3 semesters). This offers students to achieve a Diplom (FH) degree within 7 semesters only, and parallel to a full-time job.

Degree	Duration	GQF/EQF level
Diplom (FH)	after 3,5 years	level 6 (Diplom Univ. would be level 7)

Reason for the consideration as best practice:

Besides its specific characteristic as an extra-occupational study course, this program offers very flexible entrance requirements. It is open not just for graduates of vocational trainings in the field of Information Technology, but also for university drop outs. Work experience can be accredited and offers a reduction of study time. Furthermore, there is the possibility to study without having the A-levels/ diploma from German secondary schools qualifying for university admission or matriculation.

B) Methodologies and outputs:

It is an extra-occupational study course, which can be studied parallel to a full-time job. The study consists to a large part of home work/self-study and to a smaller part of attendance classes. The attendance classes are usually Friday in the evenings from 17.00 to 21.00 and every second Saturday full-time from 9.00 to 17.00. The implementation in to the job practice is an integral part of the study in the form of transfer and assignment papers.

C) Involvement of players:

University of Applied Sciences Zwickau, the media project Institut für IT- und Managementtechnologien gGmbH in Dresden (Germany)

D) Critical factors and weaknesses:

The University reported to have some issues with the students' organization related to contacts and communication, since students very rarely use the University's facilities, like the library or

online accesses. Another critical situation occurred during the implementation of the program. Some student groups were too small, so they were combined. This resulted in some content changes, which caused some issues among the students. Another problem occurred with the funding system based on the ESF. The study period lasts much longer than the funding period, and it is unsure whether students will get a second funding period. Although, when students do not get the ESF funding, the program is tax deductible. But they have to pay a high amount of money on their own in the first place, which is very difficult for some students.

E) Opportunities for future development:
Since the staff of this program knows about the rare use of communication coming from the students towards the University, it is planned to introduce more information events to disseminate all possible offers the University has for students.

2 Description of National and Regional Context

2.1 National: Germany

In terms of the German economy, the Federal Ministry of Economic Affairs and Energy published their Annual Economic Report, stating that it is in a good condition. The gainful employment hit a record high, the unemployment rate drops and the development in the job market enables noticeable pay increases. Since 1.1.2015, a general legal minimum wage of gross 8,50 Euro per hour has been introduced. It will be adjusted every two years.

At the end of last year, the European Commission published suggestions for the stabilization of the investment activity. The Federal Government appreciates this initiative. In all EU member states especially the field of private investments must be improved steadily. Complementary, capital from EU funds must be used at its best.

The social market economy in Germany is based on the understanding, that only an open, competitive, fair and solidary society will be economically successful in the long run. This common understanding is a goal of the Federal Government. Furthermore, a goal is to open higher chances for private investments, to strengthen innovation and competitiveness of companies and to support the societal acceptance therefor. To accomplish these goals, the Federal Government plans to extend public infrastructure, to strengthen innovation and to support the German economy, especially the industry and the middle class, during the digital transformation. Additionally, the aim is to continue the energy revolution successfully and cost-effectively, to invest in education for the protection of the demand for specialized employees, to strengthen the job market integration and to enlarge the possibilities for participation.

In the field of vocational education, the dual vocational training scheme is a success factor for the industrial location Germany and highly recognized worldwide. With its work phases in companies, who educate their students within a professional environment, paired with theoretical education in public vocational schools, the dual education offers very good qualification for young people for a start into work life. Thus, the goal of the Federal Ministry of Education and Research (in German: BMBF) is to strengthen this concept. It contributes immensely to the fact, that Germany has the lowest youth

unemployment within in the European Union[4]. In Germany, about 50 percent of all school-leavers decide for vocational training provided by companies. The BMBF supports, among others, the European Alliance for Apprenticeships initiative launched by the European Commission. Nowadays, in the field of Higher Vocational Education, there also exist a growing amount of programs where students can now combine vocational education within companies and academic education within Universities, which becomes vital for competitiveness and social participation. The BMBF is also closely cooperating with the OECD in the context of work-based learning.

In the context of **funding**, the maximum subsidy for training and examination costs was increased to 15.000 Euro in October 2015 with the so called „**Meister-BAföG**". It is specially designed for students who plan to get a Master Craftsman Diploma or a comparable qualification. Since the foundation of the „Meister-BAföG" in 1996, about 1,7 million vocational promotions have been enabled. Furthermore, in the field of University funding, since the beginning of 2015, the federal government relieved the states by ca. 1,2 billion Euro, by taking over 100% of the so called „**BAföG**". This is specially designed for University students and pupils. This allows the states to invest more money in the development of schools or Universities, for instance. These improvements in funding possibilities in Germany immensely help students to decide for higher training programs, which also help the target groups of the two best practices announced in this survey.

In the context of **recognition of foreign vocational qualifications**, in Germany about 20.000 procedures were executed in 2014. This shows a plus of 20 percent in comparison to 2013. From 14.838 decided procedures, about 78 percent ended with a full equivalence and only 3,6 percent were refused. This shows the growing awareness to the importance of the recognition of foreign vocational qualifications in Germany.

2.2 Regional: Federal State of Saxony

With about 4 million inhabitants, Saxony ranks on position six among the 16 federal states in Germany. The average age of the people living in Saxony is 46,6 years[5]. The average amount of children per woman is 1,57[6] and lies on the first place among all federal states. The development of the population differs from region to region. In general, the population is decreasing. However, the biggest cities, Dresden and Leipzig, show an increase. In the face of population decline and thus, skills shortages, Saxony wants to attract other German and also foreign skilled workers. Hence, immigration is an important part of the solution. According to the Secretary of State for Employment Martin Dulig, the year 2015 was economically a successful year. The Saxon job market is in a good condition. It had the lowest unemployment rate since the reunification of Germany. The unemployment rate lies at 7,5 %. According to the census from 2011, Zwickau ranks on fourth place of the Saxon cities in the field of jobs with social insurance contribution per 1000 inhabitants in the age between 18 and 64[7].

[4] http://www.statista.com/statistics/266228/youth-unemployment-rate-in-eu-countries/

[5] Gunnar Saft: Sachsen schrumpft langsamer. In: Sächsische Zeitung. 69, Nr. 295, 20. Dezember 2014, S. 1, http://dispatch.opac.d-nb.de/DB=1.1/CMD?ACT=SRCHA&IKT=8506&TRM=2448502-0.

[6] Statistisches Bundesamt: Pressemitteilung vom 16. Dezember 2015 – 468/15 – Anstieg der Geburtenziffer 2014 auf 1,47 Kinder je Frau, https://www.destatis.de/DE/PresseService/Presse/Pressemitteilungen/2015/12/PD15_468_126pdf.pdf?__blob=publicationFile.

[7] Zahlen zum 9. Mai 2011 gemäß Zensus 2011, https://ergebnisse.zensus2011.de/#StaticContent:00,BEV_1_3_0,m,table.

Equivalent to the integration of asylum seekers into the job market, also other disadvantaged groups will have to be supported during job seeking. Sustainable employment, the improvement of education and further training, as well as the promotion of social inclusion are crucial elements of actions for the upcoming five years. More than 660 million Euro are provided by the European Social Fund (ESF) for these measures.

Each year, the German education gets monitored. According to this monitor of 2015, Saxon schools rank the first position since 10 years[8]. The strength here lies mainly in the school quality and infrastructure for advancement.

Saxony is also very attractive for new students. From 21.395 students, who started studying in Saxony in 2014, 34 % got their university entrance qualification in Saxony, 38 % got it in other federal states of Germany and 28 % came from abroad[9]. Among male students, Mechanical Engineering was the most attended field of study (first place in the winter term 2014/2015); for the female students, it was Medicine, and, very closely behind, pedagogy[10]. In the field of further education, the population in Saxony shows high interest. The participation rate on further education in Saxony lie at 55 % in the year 2011, whereas the participation rate in Germany lie at 49 %.

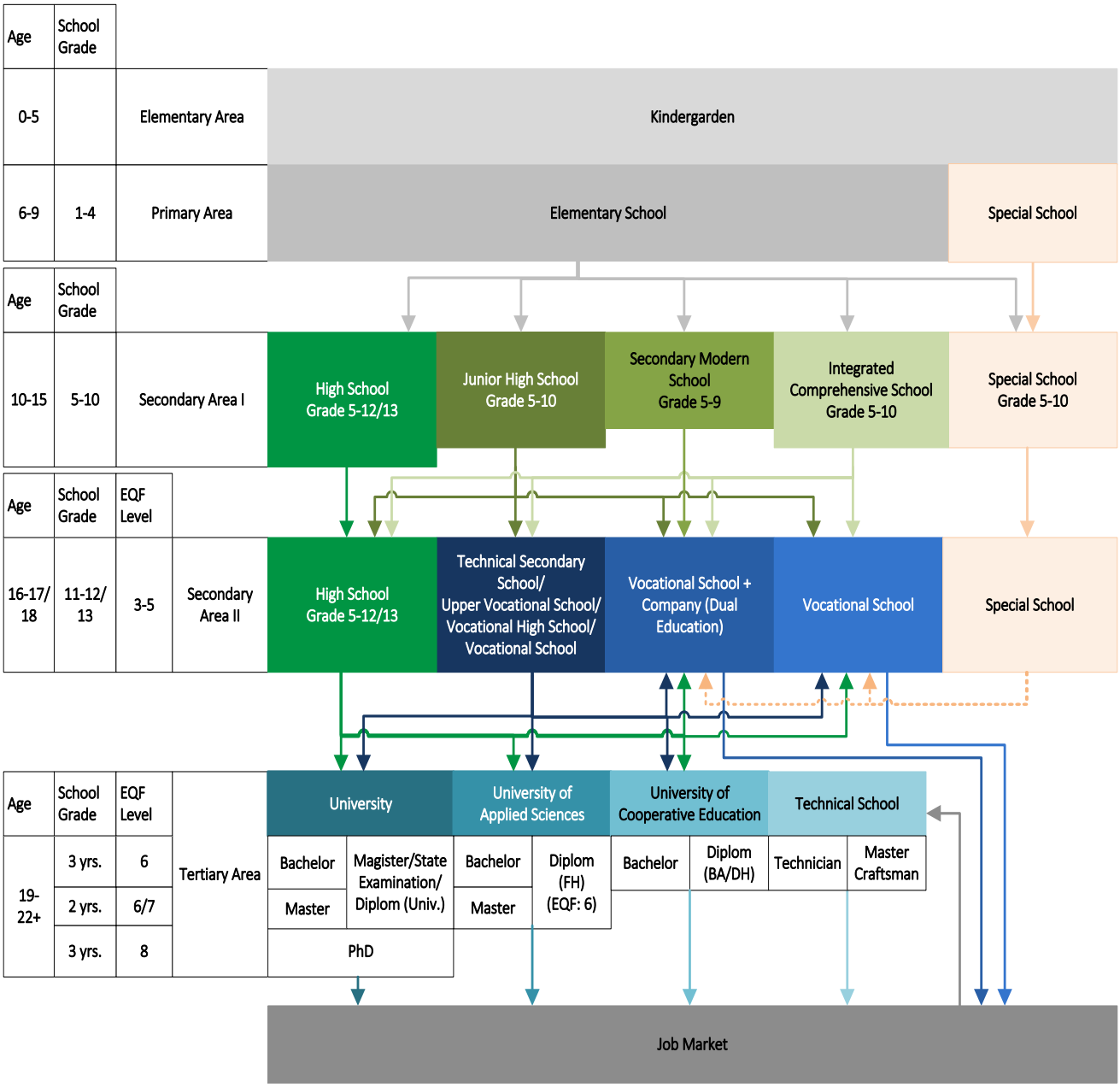
3 Description of National Education System

In Germany, the responsibility for the education system is determined by the federal structure of the state. The Federal States generally have the right to legislate. Within the education system, this applies to the school sector, the higher education sector, adult education and continuing education. Administration of the education system in these areas is almost exclusively a matter for the Federal States.

In Saxony, the federal state, where the University of Applied Sciences Zwickau is located, there are about 1.600 schools providing general education, with about 340.000 pupils and 32.000 teachers. In the infographic, a summary of the different schools, vocational schools and academic institutions in Germany is shown.

[8] Staatsministerium für Kultus. Das sächsische Bildungssystem im Test, http://www.schule.sachsen.de/6622.htm.
[9] Statistisches Landesamt des Freistaates Sachsen (2016). Studienanfänger zieht es nach Sachsen. Neue Publikation mit Indikatoren zu Hochschulen und Berufsakademie erschienen, https://www.statistik.sachsen.de/download/200_MI-2016/MI-3-2016.pdf.
[10] Statistisches Landesamt des Freistaates Sachsen, Kamenz, April 2015, http://www.statistik.sachsen.de/html/645.htm.

3.1 Infographic of German Education System



A very good, detailed and interactive depiction in German language was done by the Federal Agency for Civic Education (in German: Bundeszentrale für Politische Bildung, http://www.bpb.de/fsd/bildungsgrafik2/?1). Our graphic is based on their concept.

German Education System

After successfully finishing the High School at grad 12 or 13, pupils will get the A levels, or respectively the diploma from German secondary schools qualifying for university admission or matriculation.

From early on, there is always the possibility for children with special needs to attend the so called Special Schools, where children and younger people are prepared for a preferably independent life within society and career.

At the Technical Secondary School, pupils can achieve the general or subject-specific diploma from German secondary schools qualifying for university admission or matriculation. The theoretical education takes two years for pupils with school qualification until grade 10, and one year for young people who already finished their vocational education.

In a vocational school, students can achieve a full-time theoretical vocational qualification up to EQF level 3. Furthermore, there is the possibility to choose the dual vocational education, where a company takes over the practical education and the vocational school takes over the theoretical part. It is a three-year program with a degree at EQF level 4.

Later on, students can achieve a technical or master craftsman qualification (EQF level 6). The completion of higher education institutions leads to a Bachelor's (EQF level 6) or Master's (EQF level 7) degree. In comparison to a regular University, "Fachhochschulen" or Universities of Applied Sciences do not have the right to offer doctoral degrees, which would be EQF level 8. In some federal states in Germany, there is the possibility to participate in a cooperative conferral of a doctorate, where both University and University of Applied Sciences professors are appointed to evaluate the doctoral thesis. A Diplom (FH) is EQF level 6 and a Diplom (Univ.) is EQF level 7. However, the Bachelor and Master degrees of both institutions are equal.

The two German best practices are located in EQF level 4 and 6, provided by a University of Applied Sciences and a Chamber of Crafts. The Chamber of Crafts has the task to promote the interests of the handicraft and is responsible to control the vocational education in this field. They create and design the system of the trade tests and the examination for the master craftsman's certificates.

EQF and GQF

The core piece of the **EQF** are **8 reference levels**. They describe learning results. Accordingly, these learning results within each level is described in **3 pillars**: **knowledge**, **skills** and **competences**. The EQF was used as the point of origin for the development of the GQF.

The GQF defines **8 levels**, which can be assigned to the 8 levels of the EQF. As national implementation of the EQF, the GQF takes the special features of the German Education System into consideration and contributes to an adequate evaluation and comparability of Germany qualifications in Europe. The GQF has **4 pillars**: **knowledge**, **skills**, **social competences** and **autonomy**.

Personal competences		Professional competences	
Social Competence	Autonomy	Knowledge	Skills

Team/ leadership skills, involvement and communication	Autonomous responsibility/ responsibility, reflectiveness and learning competence	Depth and breadth	Instrumental and systemic skills, judgement

01.05.2013: signing of the common resolution for the GQF by:

- The Federal Ministry of Education and Research (BMBF)
- The Federal Ministry for Economic Affairs and Energy (BMWi)
- The Standing Conference of the Ministers of Education and Cultural Affairs (KMK)
- The Conference of Ministers of Economics (WMK)[11]

objectives:

- to make equivalences and differences between qualifications more transparent
- to support permeability

To find out, which level which qualification is, German people can insert their qualification at the webpage by the GQF: http://www.dqr.de/content/2316.php and the system will tell them automatically, which EQF/GQF level it is.

3.2 Definition of HVET in Germany

HVET: Higher Vocational Education and Training: from EQF/ GQF levels 5-8.

EQF/GQF Levels 5-8 in summary:

Level 5	▪ Certified IT-Specialist ▪ Certified Service Technician
Level 6	▪ Bachelor ▪ Certified Expert Merchant ▪ School providing vocational education (certified…) ▪ In German: "Fachwirt", in English: "Specialist" (certified…) ▪ Certified Master Craftsman ▪ Certified Operative Professional (IT)
Level 7	▪ Master ▪ Certified Strategic Professional (IT)
Level 8	▪ Promotion

Level 5:

[11] In German: Bundesministerium für Bildung und Forschung (BMBF), Bundesministerium für Wirtschaft und Technologie (BMWi), Kultusministerkonferenz (KMK), die Wirtschaftsministerkonferenz (WMK)

Level 5			
Be in possession of competences for the autonomous planning and processing of comprehensive technical tasks assigned within a complex and specialised field of study or field of occupational activity subject to change.			
Professional competence		**Personal competence**	
Knowledge	**Skills**	**Social competence**	**Autonomy**
Be in possession of integrated professional knowledge within a field of study or integrated occupational knowledge within a field of activity. This also includes deeper, theoretical professional knowledge. Be familiar with the scope and limitations of the field of study or field of occupational activity.	Be in possession of an extremely broad spectrum of specialised, cognitive and practical skills. Plan work processes across work areas and evaluate such processes according comprehensive consideration to alternative courses of action and reciprocal effects with neighbouring areas. Provide comprehensive transfers of methods and solutions.	Plan and structure work processes in a cooperative manner, including within heterogeneous groups, instruct others and provide well-founded learning guidance. Present complex facts and circumstances extending across professional areas in a targeted manner to the appropriate recipients of such information. Act in an anticipatory manner in considering the interests and requirements of recipients.	Reflect on and assess own learning objectives and learning objectives set externally, undertake self-directed pursuit of and assume responsibility for such objectives, draw consequences for work processes within the team.

Level 6:

Level 6			
Be in possession of competences for the planning, the processing and the evaluating of comprehensive technical tasks and problems set and be in possession of competences for autonomous management of processes within subareas of a scientific subject or within a field of occupational activity. The structure of requirements is characterised by complexity and frequent changes.			
Professional competence		**Personal competence**	
Knowledge	**Skills**	**Social competence**	**Autonomy**
Be in possession of broad and integrated knowledge including knowledge of basic scientific principles and the practical application of a scientific subject as well as a critical understanding of the most important theories and methods (corresponding to level 1 – Bachelor level – of the Qualifications Framework for German Higher Education Qualifications) **or** be in possession of broad and integrated occupational knowledge including current technical developments. Be in possession of knowledge for the further development of a scientific subject **or** of a field of occupational activity. Be in possession of relevant knowledge at interfaces to other areas.	Be in possession of an extremely broad spectrum of methods for the processing of complex problems within a scientific subject (corresponding to level 1 – Bachelor level – of the Qualifications Framework for German Higher Education Qualifications), further fields of study **or** field of occupational activity. Draw up new solutions and evaluate such solutions including according consideration to various criteria even in circumstances where requirements are subject to frequent change.	Assume responsibility in working within expert teams **or** show responsibility in leading[3] groups or organisations. Instruct the technical development of others and act in an anticipatory manner in dealing with problems within the team. Present experts with arguments for and solutions to complex professionally related problems and work in conjunction with such experts on further development.	Define, reflect on and assess objectives for learning and work processes and structure learning and work processes autonomously and sustainably.

Level 7:

Level 7			
Be in possession of competences for the processing of new and complex professional tasks and problems set and be in possession of competences for autonomous management of processes within a scientific subject or within a strategically oriented field of occupational activity. The structure of requirements is characterised by frequent and unpredictable changes.			
Professional competence		**Personal competence**	
Knowledge	**Skills**	**Social competence**	**Autonomy**

Level 8:

Level 8			
Be in possession of competences for the obtaining of research findings in a scientific subject or for the development of innovative solutions and procedures within a field of occupational activity. The structure of requirements is characterised by novel and unclear problem situations.			
Professional competence		**Personal competence**	
Knowledge	**Skills**	**Social competence**	**Autonomy**
Be in possession of comprehensive, specialised, systematic state-of-the art knowledge in a research discipline and contribute towards the expansion of knowledge within the specialist discipline (corresponding to level 3 – Doctorate level – of the Qualifications Framework for German Higher Education Qualifications) **or** be in possession of comprehensive occupational knowledge in a strategically and innovation oriented field of occupational activity. Be in possession of appropriate knowledge at the interfaces to adjoining areas.	Be in possession of comprehensively developed skills relating to the identification and solution of novel problems set in the areas of research, development or innovation within a specialised scientific subject (corresponding to level 3 – Doctorate level – of the Qualifications Framework for German Higher Education Qualifications) **or** in a field of occupational activity. Also design, implement, manage, reflect on and evaluate innovative processes including in cross-activity areas. Evaluate new ideas and procedures.	Lead groups or organisations from a position of responsibility in complex or interdisciplinary tasks whilst activating the areas of potential within such groups or organisations. Promote the professional development of others in a targeted and sustained manner. Lead cross-specialist debates and introduce innovative contributions to specialist professional discussions including in international contexts.	Define objectives for new complex applications or research oriented tasks reflecting on possible societal, economic and cultural implications, select appropriate means and develop new ideas and processes.

Source: The German Qualifications Framework for Lifelong Learning (2011). Retrieved on 4.3.2016 from http://empleo.ugr.es/unilo/documentos/dqr_document_en_110322.pdf.

4 Methodology

Reason for the consideration as best practice: Electrical Engineering

1. It offers the possibility for students to gain 3 degrees within only 5 years. It is an immense saving of time of at least 3 years.

2. Due to the high demand of more master craftsmen degrees because more and more students decide for an academic education only, this study concept helps to solve the current skills shortage, especially in the field of crafts and trades. In comparison: in 1993, 208.000 young people choose a vocational education. In 2013 there were only 139.000 left.[12]

– Learning pathway: The concept is that of a three track course of study, which means students can achieve three degrees within 10 semesters (5 years).
From the 1st until the 6th semester, the work load of the study is reduced (18 instead of 24 Credit Points per semester). The 7th semester is solely reserved for internships for work experiences in the company. From the 8th semester, it is a regular full-time study with mutual recognition of modules from the master craftsman qualification and the study, as well as aligned learning contents between the study and the vocational and master craftsman education.

  The qualification for the master craftsman proves if the craft is done masterfully, independently and if apprentices are trained properly. The examination consists of 4 parts:
  1. Testing of the masterful performance of substantial activities/operations
  2. Testing of theoretical subject-related knowledge
  3. Testing of business-related, commercial and legal knowledge
  4. Testing of job- and work-pedagogical knowledge

  Time working within the companies: The activities done in the companies is an important part of this dual study. The students get in contact actively with actual work contexts. Thus they learn to apply their knowledge with a practical orientation and at the same time bring in the newest knowledge into the companies.

Outcomes & Success Factors: see 5 Description of Each Practice

Reason for the consideration as best practice: Business Informatics

Besides its specific characteristic as an extra-occupational study course, this program offers very flexible entrance requirements. It is open not just for graduates of vocational trainings in the field of Information Technology, but also for university drop outs. Work experience can be accredited and offers a reduction of study time. Furthermore, there is the possibility to study without having the A-levels/ diploma from German secondary schools qualifying for university admission or matriculation.

– Design of the learning pathway: concept: an extra-occupational study course of Business Informatics with a Diplom (FH) degree within 10 semesters (5 years). It specifically addresses graduates of vocational trainings in the field of Information Technology. The vocational education and practical experiences can profoundly be accredited, which allows a recognition of 72 ECTS (3 semesters). This offers students to achieve a Diplom (FH) degree within 7 semesters only, and parallel to a full-time job.

Outcomes & Success Factors: see 5 Description of Each Practice

[12] http://www.welt.de/wirtschaft/karriere/bildung/article139408475/Wie-man-in-fuenf-Jahren-seinen-Baecker-Bachelor-macht.html retrieved on: 4.1.2016

5 Description of Each Practice

5.1 Three track course of study: Electrical Engineering

1. **Sector:** This program is general assigned to the sector of Engineering and specifically to Electrical Engineering.
2. **Players involved:** the University of Applied Sciences Zwickau, Chamber of Trade (in German: Handwerkskammer), a local company for the practical work experiences

3. **Development Process:**
   - Date of foundation: since 2014
   - Governance of the partnership: This study consists of 2 partners: Since it is a collaborative study program of 2 organizations, the governance is as follows: The University of Applied Sciences Zwickau is responsible for the content and teaching of the academic education, the quality assurance and it awards the academic title of the Diplom (FH). The Chamber of Trade is responsible for the vocational qualification and the master craftsman diploma. The 2 partners are equal.
   - Learning pathway: The concept is that of a three track course of study, which means students can achieve three degrees within 10 semesters (5 years).

Degrees	Duration	GQF/EQF level
Diplom (FH)[13]	after 5 years	level 6 (Diplom Univ. would be level 7)
Integrated vocational qualification certified by the local Chamber of Trade (in German: Handwerkskammer)	after 2,5 years	level 4
Integrated master craftsman diploma	after 4 years	level 6

From the 1st until the 6th semester, the work load of the study is reduced (18 instead of 24 Credit Points per semester). The 7th semester is solely reserved for internships for work experiences in the company. From the 8th semester, it is a regular full-time study with mutual recognition of modules from the master craftsman qualification and the study, as well as aligned learning contents between the study and the vocational and master craftsman education.

[13] FH = in German: "Fachhochschule", in English: University of Applied Sciences, in comparison to a regular University, "Fachhochschulen" do not have the right to offer doctoral degrees. In some federal states in Germany, there is the possibility to participate in a cooperative conferral of a doctorate, where both University and University of Applied Sciences professors are appointed to evaluate the doctoral thesis. A Diplom (FH) is EQF level 6 and a Diplom (Univ.) is EQF level 7. However, the Bachelor and Master degrees of both institutions are equal.

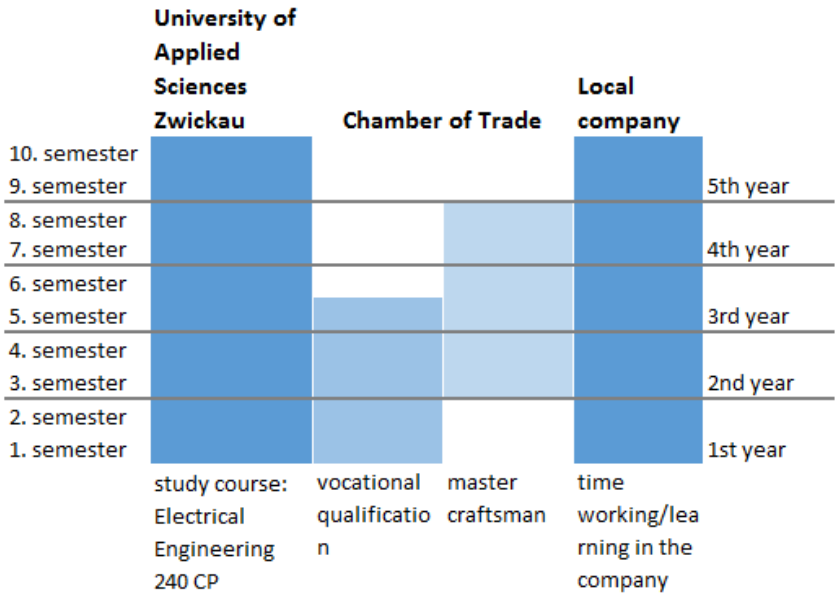


Figure 1: Structure of the Three Track Course of Study

4. Indicators (outcomes and successfactors):
   - Success factors:
     - Outcomes: Currently, there are 4 students enrolled. They are still in their 2nd year, so no one was already able to graduate.
     - Drop out rate: unknown
     - Support by national authorities: none
     - Size of target group: all young people interested in studying and achieving the master craftsman qualification in Electrical Engineering
     - Quality assurance: the study program will be certificated and accredited in 2016
     - Degree of innovation for students: It offers the possibility for students to gain 3 degrees within only 5 years. It is an immense saving of time of at least 3 years.
     - Possibility to get international certification: students get points via the European Credit Transfer and Accumulation System (ECTS), students who graduate get a Diploma Supplement in German and English
     - Approaches to cover specific demands of industry/businesses: Due to the high demand of more master craftsmen degrees because more and more students decide for an academic education only, this study concept helps to solve the current skills shortage, especially in the field of crafts and trades. In comparison: in 1993, 208.000 young people choose a vocational education. In 2013 there were only 139.000 left[14]. Due to the dual system (combination of University and company education), the companies benefit from the transfer of the know how coming from the University of Applied Sciences Zwickau.
     - National/international reputation: the program is published on national level on common study program platforms and via the Chamber of Trade (in German: Handwerkskammer)

[14] http://www.welt.de/wirtschaft/karriere/bildung/article139408475/Wie-man-in-fuenf-Jahren-seinen-Baecker-Bachelor-macht.html retrieved on: 4.1.2016

- Funding system: Students have to pay 136,40 € per semester, where the tickets for public transport in Zwickau is already included. There is the possibility to apply for financial support with the help of a German law, called Bundesausbildungsförderungsgesetz (BAföG). It is partly a grant and a loan. The amount depends on the student's family's income and the student's performance. On individual level, students have work contracts with companies, where they have their practical training. They get a monthly payment from these organizations on a small level.
- Contribution in supporting innovation: the program contributes to promote master craftsman qualifications, which are needed by the industry. Also the program offers to have this qualification ready in less time than usually.

5. Training program structure:
   - Qualifications: Diplom (FH), Integrated vocational qualification certified by the local Chamber of Trade, Integrated master craftsman diploma
   - Basic/advanced education:
     - 1.–3. semester: basics abut Electrical Engineering, mathematics, physics, IT
     - 4.–10. semester: special knowledge in the area of specialization
     - 7. semester: practice semester in the company
     - 10. semester: Diplom thesis
   - Program duration: The program lasts 10 semesters, that equals 5 years.
6. Training/learning methods:
   - Form of study: attendance courses, part time study, executed by the University of Applied Sciences
   - Integrated vocational qualification: it consists of practical work at the local company and theoretical attendance classes at the Chamber of Trade with mainly practical contents
   - Integrated master craftsman diploma: it consists of practical work at the local company and attendance classes executed by the Chamber of Trade on Friday and Saturday or in blocks, with some parts in E-Learning format, but mostly attendance classes
7. Management of training: it is managed both by the local Chamber of Trade and the University of Applied Sciences Zwickau
8. Management of relationships with triple helix stakeholders: The local Chamber of Trade is responsible for an exchange and knowledge transfer with businesses around. Since it is a collaborative study program of 2 organizations, the students have the chance to improve their network, their professional interaction, get to know the newest developments. It offers a chance for companies to build and preserve experts for a long term.
9. Problems encountered: It is a very full time schedule. Additionally, in comparison to dual study courses, it is still a very new program, thus the degree of popularity is not very high yet. Furthermore, companies often do not easily want to sign work contracts for a 5-years period.
10. Solutions found/possible future solutions: The degree of popularity should be increased in the future. There are currently 2 study programs (Electrical Engineering, and Supply and Environmental Engineering). The study offers could be extended to achieve a higher variety for students, to attract more students. For example, the branches of automobile engineering and information technology are currently of high interest among students.
11. Impact: Due to the high demand of more master craftsmen degrees because more and more students decide for an academic education only, this study concept helps to solve the current skills shortage, especially in the field of crafts and trades. In comparison: in 1993, 208.000 young

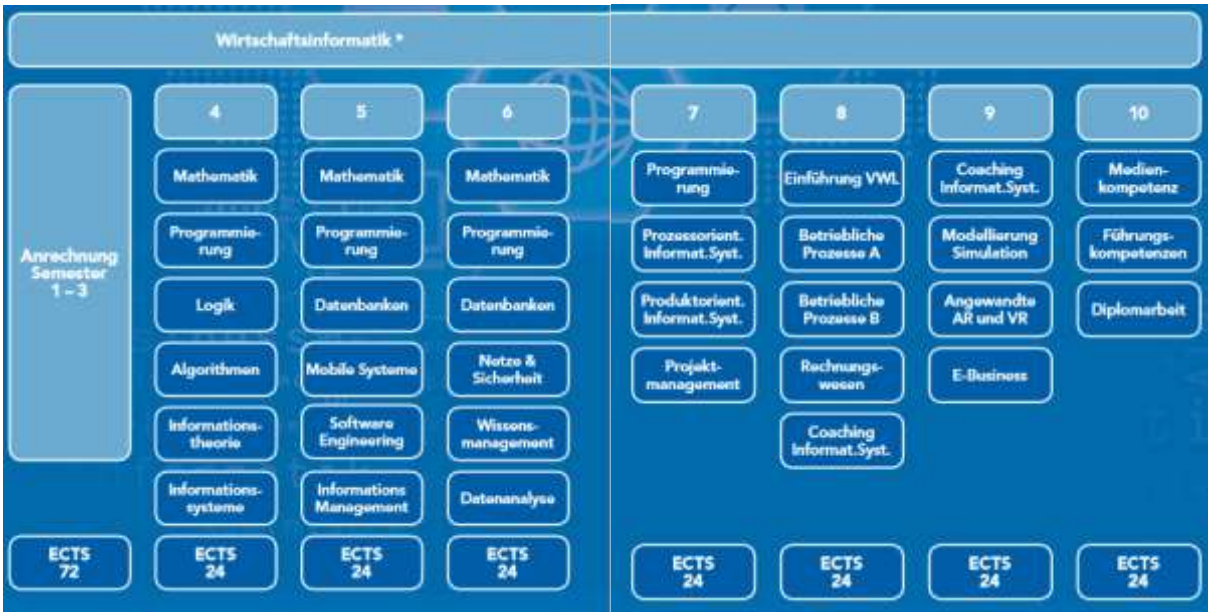
people choose a vocational education. In 2013 there were only 139.000 left. Due to the dual system (combination of University and company education), the companies benefit from the transfer of the know how coming from the University of Applied Sciences Zwickau.

12. **Expectations about possible future developments:** to engage more students.
13. **Employment rates:** Since the students are still in their 2nd year, no one was already able to graduate. Thus, we cannot say anything for sure about employment rates.

5.2 Extra-occupational study course: Business Informatics

1. **Sector:** This program is general assigned to the sector of Information Technology and specifically to Business Informatics.
2. **Players involved:** Two partners are involved in this study: the University of Applied Sciences Zwickau and the media project Institut für IT- und Managementtechnologien gGmbH in Dresden (Germany).

3. **Development Process:**
   - Date of program's foundation: The first enrollment phase for students started in February 2013.
   - Governance of the partnership: This study consists of 2 partners: Since it is a collaborative study program of 2 organizations, the governance is as follows: the media project Institut für IT- und Managementtechnologien gGmbH is responsible for the organizational and overall leadership. The University of Applied Sciences Zwickau is responsible for the content, the quality assurance and it awards the academic title. The 2 partners are equal.
   - Design of the learning pathway: concept: an extra-occupational study course of Business Informatics with a Diplom (FH) degree within 10 semesters (5 years). It specifically addresses graduates of vocational trainings in the field of Information Technology. The vocational education and practical experiences can profoundly be accredited, which allows a recognition of 72 ECTS (3 semesters). This offers students to achieve a Diplom (FH) degree within 7 semesters only, and parallel to a full-time job.



4. Indicators:

- Success factors:
  - Outcomes: 1 student finished successfully so far (beginning of the program: winter term 2012/13), currently there are 18 students enrolled.
  - Drop out rate: 1 student
  - Support by national authorities: financial sponsorships by the European Social Fund (ESF)
  - Size of target group: all people who already work in the IT business and wish to reach a higher career level (Diplom level) but still want to keep their job at the same time
  - Quality assurance: The quality assurance system of the University of Applied Sciences Zwickau is used for the whole study program. It consists of 3 parts: study and examination regulations, study materials, teaching staff
  - Degree of innovation for students: Besides its specific characteristic as an extra-occupational study course, this program offers very flexible entrance requirements. It is open not just for graduates of vocational trainings in the field of Information Technology, but also for university drop outs. Work experience can be accredited and offers a reduction of study time. Furthermore, there is the possibility to study without having the A-levels/ diploma from German secondary schools qualifying for university admission or matriculation.
  - Possibility to get international certification: students get points via the European Credit Transfer and Accumulation System (ECTS), students who graduate get a Diploma Supplement in German and English
  - Approaches to cover specific demands of industry/businesses: this study concept helps to solve the current skills shortage, especially in the field of IT. For companies it offers the chance to tie good professionals for a long time. Additionally, current know-how can be used coming from the University of Applies Sciences.
  - National/international reputation: the program is published on national level on common study program platforms and via the media project Institut für IT- und Managementtechnologien gGmbH and their partners

- Funding system: the tuition fee for 7 semesters is 14.950 EUR. This fee includes: entrance examination, enrollment fee, attendance and distance study documents, module exams, supervision and assessment of the Diplom thesis, the fee for the "Studentenwerk", which is an organization providing social, financial and cultural support services to students in Germany. The fee can be paid per semester or per month. The students normally already own a first qualification, so the full amount is tax deductible. Sometimes also the company, where the student is employed at, takes a share in the fees. There is also the possibility to get a sponsorship by the European Social Fund (ESF) of up to 70% of the amount.
- Contribution in supporting innovation: The innovation of this program lies in its unclassical concept. Also the accreditation management and the connection of vocational and academic education is highly innovative.

5. Training program structure:
   - Qualifications: Diplom (FH) in Business Informatics
   - Which part is basic/advanced education: There is no clear distinction between a basic and an advanced education phase. It is rather a topic distinction. At first the study is related to informatics and afterwards to the field of economics.
   - Program duration: 7 semesters, which equals 3,5 years. The Diplom thesis is written in the 7th semester.
6. Training/learning methods: It is an extra-occupational study course, which can be studied parallel to a full-time job. The study consists to a large part of home work/self-study and to a smaller part of attendance classes. These are usually Friday in the evenings from 17.00 to 21.00 and every second Saturday full-time from 9.00 to 17.00. The implementation in to the job practice is an integral part of the study in the form of transfer and assignment papers.
7. Management of training: Since it is a collaborative study program of 2 organizations, the management is defined as follows: the media project Institut für IT- und Managementtechnologien gGmbH is responsible for the organizational and overall leadership. The University of Applied Sciences Zwickau is responsible for the content, the quality assurance and it awards the academic title. The teaching staff is provided by the University of Applied Sciences Zwickau, other regional Universities or from the industry and they meet the conditions of the Saxon University Law.
8. Management of relationships with triple helix stakeholders (training/innovation, business, institutions): Since it is a collaborative study program of 2 organizations, and due to the possibility to study parallel to a full-time job, the students have the chance to improve their network, their professional interaction, get to know the newest developments. It offers a chance for companies to build and preserve experts for a long term.
9. Problems encountered: The University reported to have some issues with the students' organization related to contacts and communication, since students very rarely use the University's facilities, like the library or online accesses. Another critical situation occurred during the implementation of the program. Some student groups were too small, so they were combined. This resulted in some content changes, which caused some issues among the students. Another problem occurred with the funding system based on the ESF. The study period lasts much longer than the funding period, and it is unsure whether students will get a second funding period. Although, when students do not get the ESF funding, the program is tax deductible. But they have to pay a high amount of money on their own in the first place, which is very difficult for some students.

10. Solutions found: Since the staff of this program knows about the rare use of communication coming from the students towards the University, it is planned to introduce more information events to disseminate all possible offers the University has for students.
11. Impact: the innovation of this program is to have two advantages for students: a possibility to accredit previous vocational education or previous study contents from drop-outs, which leads to a reduced study period, and the possibility to study parallel to their full-time jobs and still manage to achieve a Diplom degree in only 3,5 years. With these kind of programs, it currently offers a highly attractive alternative to standard study programs to people who already have a job in the IT business and aim for a higher career. It is a chance to achieve a higher degree, even if they cannot afford or do not want to drop out of their work contracts. There are no off times in their curricula vitae.
12. Expectations about possible future developments: In the future, the already very good and exemplary collaboration between the media project institute and the University of Applied Sciences can still be intensified for possible future programs and new ideas. Internationalization of the program and also the extension into other study fields is planned.
13. Employment rates: Since the program is extra-occupational, the students are already employed. However, after achieving a higher degree, it is now possible to reach higher positions, thus further career opportunities, which were not possible to reach beforehand.

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