iV4j

GUIDE WORK-BASED LEARNING

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GUIDE -
WORK-BASED LEARNING

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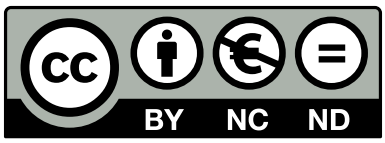

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PREFACE

PREFACE

In the last three decades, more and more professionals workers are confronted with more complex jobs and responsibilities. In the industrial age jobs had to fit into firm conditions whenever machines had to be operated. Nowadays professional training and further education must improve in terms of knowledge, skills and ways of thinking of the studying.

Regular education concentrates primarily on the ability to study on a life-long basis, because professions are required to deliver more complex problem solutions, both regarding soft skills and strategic intellect. Therefore, the IV4J project puts special attention on the more and more dynamic nature of abilities and attitudes of professional education; can these be trained? Must we encourage professional training to become more open towards unforeseen situations, leave our comfort zones and prepare to change?

This question makes up the conceptional frame for networking and creating problem-solving methods, creative thinking and problem focused learning. Our conceptional frame shall be noticeable and uncomplicated so that its consequences can be included and put into practice without problems in various professional situations in all of Europe. We hope that this manual IO2 with the version of IO4 about the potential of web 2.0 can be combined with professional education. At least the IV4J project has made a great effort to connect the different studying methods with each other appropriately.

We welcome you to our IO2 manual and we are looking forward to receiving your feedback on how you see possible consequences for practice.

The IV4J Project Team.

INTRODUCTION

Work-based-learning: a win-win situation for learners and companies

Clear educational purposes and objectives should be defined and set for all WBL periods, for even short ones. Learning results are clear-cut aims which both, the student and the employer, are aware of. Clear arrangements between periods of learning at work and in school are the key to success in education at work, particularly out of the learner's perspective. Precise objectives make it much easier for learners and employers to define all the relevant knowledge and thus to work in a result oriented way.

It is of crucial importance that the workplace offers numerous and comprehensive studying opportunities, which make it possible for the participants to develop their abilities, knowledge and competences. Whenever education is too narrow/one-sided and when there are limits specific to the enterprise the possibilities for further transferability and development are limited.

The planning of the Wbl should define a sufficiently wide spectrum of knowledge, abilities and competences including a number of key competences. Enterprises, particularly SMEs, should therefore cooperate appropriately and possibly take a form of "training alliances" into consideration.

Learning on the job is a win-win-situation if it is done in the course of a professional training or an apprenticeship for example.

1. **Development of relevant and important competences for learners**
   Nowadays, especially on the rough labour market, the experience of Wbl opens a lot of opportunities for future endeavours. In the day to day learning process on the job, job-specific competences are developed purposefully already in the course of professional training. Learning at work contributes to improve the quality of professional education and assures that young people acquire abilities that are needed on the labor market. WBL models, which are based on intensive education on the job, often offer young people the possibility of taking a job with the employer after finishing the vocational training. The models improve the chances of participants to find an appropriate job after the training. The experiences made on the job prepare participants purposefully for future performance requirements at work. The direct transition from vocational training to occupation is of very good use for the participants. Youth unemployment in European countries with a long tradition of WBL like Austria, Denmark, Germany and Switzerland is lower than in countries with less developed WBL.
2. **Development of competences for enterprises**
   Training young people also has advantages for enterprises. The trainer benefits from the development of the abilities and competences of the learners for his or her role as a trainer, was well as for his or her occupation. The apprentices bring new positions and challenges to the business. Apprentices who are eager to learn therefore create a higher degree of willingness of all employees to undergo professional training on the job.
   The labour market forces employers more to train apprentices and existing employees in the areas they have difficulties finding qualifies employees for. Enterprises, which have not trained apprentices and employees until now, will have to train a part of the qualified employees they demand in the future. WBL plays an important role in this situation. We try to develop a guide/manual, which is supported by multi-media materials and practical visions. It describes the methodology of work-based learning, gives examples how they can be

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implemented in vocational trainings, and gives advice for implementation and examples for putting them into practice.

The described approach to work-based learnings contains:

- Europe-wide results from good-practice research and analyses, as well as discussions during the project meeting
- Descriptions of methodology, including relevant bibliographies, links and multi-media applications
- Educational approaches to be more effective in professional education
- Practical training plans and tips for implementing them.

Chapter 1. WORK-BASED LEARNING OBTAINED IN EUROPE

1.1 Objectives of the European Education Policy

Particularly in confronting high rates of youth unemployment, the field of vocational training became more and more important and noticeable on the political agenda in Europe during the last years. Sustainable enforcement of work-based-learning vocational training is an important aspect in the discussion. International studies show that young employees who underwent a vocational training in a dual education system, or at least in an education system with vast dual elements, run a much lower risk of getting unemployed then those who took a general training or a full-time vocational training off the job. Moreover, it has been proven that apprentices out of the dual system are much more successful in mastering the transition from school to work.

1.2 The European Education Alliance

There is bilateral cooperation between different countries within Europe that wants to foster vocational education. With regard to the experience with the dual system, Austria and Switzerland have particularly been calling for cooperation, apart from Germany. Now he European education alliance aims on connecting the member states even closer. Information shall be accessible more easily and be shared more easily via a network. Peer activities and conducting peer reviews shall be enforced. The overall objective is support the transition of young Europeans from school to workplace through improving the quality of vocational training and the choice of apprentice positions (European Commission 2013a). Good vocational training contributes to a positive development of young people's personal and professional skills on the one hand. On the other hand, these vocational trainings help youngsters to develop competencies and experiences that are needed by employers.

There is a European treaty from July 2013, signed by the European trade union holdings and employers, in which they obliged themselves amongst other things to make employers and young people aware of the advantages of vocational training, as well as to encourage member organisations to work together with schools and labour administrations in order to support training of mentors on the job and coaching of apprentices and to improve the quality of vocational education.

From September 2013 a topic-based network called "Work Based Learning and Apprenticeships (NetWBL) is supporting this initiative. This has been brought into place in connection with a call for bids by the European Commission (EACEA/13/2013) and consists of a group of 29 National Agencies in total. The respective results and findings of the European projects regarding lifelong learning were published on conferences, a website, an online-tool, as well as electronic newsletters.

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1.3 Investigations of workplace related learning in Europe

Forms von work-based learning

Based on the structured logic of the European Commission (European Commission 2013c) there are three rather heterogeneous groups: “apprenticeships”, “on-the-job-training periods in companies” and work based learning (WBL). There is not always an in-plant part in WBL. It concerns methods in which learning exclusively takes place in educational organisations as well.

“Apprenticeships”

“Apprenticeships” is an umbrella term for those forms of initial vocational trainings which combine training on the job (“gaining practical experience on the workplace”) with schooling and lead to nationally recognized degrees (EU Commission 2013b4). There are different forms of contracts between learners and companies. Clearly, contractual connections between learners and companies are the constituting agreements of apprenticeships (Cedefop 2011a, Eurostat 2010, ILO 2012). In contrast, this has not been the case in the investigation authorized by the European Commission.

Vocational training programmes were identified in 24 European Countries, which count as “primarily in-plant” in regards to 50% of the total learning time being spent on the job (EU Commission 2013b, p.29 ff.). In 18 of the 27 European Countries these “apprenticeships” exist next to other primarily school-based educational programmes. This suggests that in these countries the number of school-based programmes much higher, and thus more relevant, than the number of programmes containing training on the job. Moreover there is a huge variety regarding the coordination of the organisations involved, was well as regarding their roles and tasks (EU Commission 2013b, p. 55 ff.).

Source: European commission (2013 b)

All in all, states with a strong “apprenticeship system” are said to deliver very good results with regard to the transition to the labour market. However, next to building up more strengths, such as a stronger focus of the apprenticeships’ contents on the requirements of the labour market and a closer contact between apprentices and companies, some challenges of the approach are mentioned. Hence the question of long-term employability is raised, and poaching issues (i.e. trained professionals being head-hunted by competing companies) and disparities regarding the accessibility of apprenticeship training positions are being discussed.

On-the-job- training periods

This term summarizes particularly those “internships” or “traineeships” which are a mandatory or voluntary element of a Curriculum of an educational programme at school. In most cases, they make up of 25 – 30%, or less, of the duration of the whole programme.

WBL integrated into school based education programs

In this approach, practical or professional experience is gained in laboratories, workshops, kitchens, and junior or practice companies of educational institutions. The schools or education centres are responsible for this approach. In many cases, there is cooperation with companies in the region, in which agreed projects are conducted. In these approaches, teaches at educational institutions develop ideas and plans for cooperating with companies.

www.na-bibb.de
Publication "Work Based Learning in Europe" (English)

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Chapter 2. WBL IN GERMANY AND IN THE COUNTRIES OF THE PROJECT PARTNERS

2.1 Initial situation in Germany

According to the PISA study, the creative problem solution skills of German pupils are mediocre only. Approximately one fifth of the fifteen-year olds did not even obtain the base standard. Girls and boys in Germany are slightly above the average of the other countries. In this regard, the results are similar to those in France, Norway, Great Britain and the USA. The top scores were made by Singapore followed by Japan, South Korea and China. In addition, there are Australian, Canadian and Finnish pupils than Germany considerably better. Among other things the Pisa testers wanted to know, whether the pupils can operate a ticket machine correctly or whether they are able to find out on their own an air conditioner with three unlettered regulators works.

Thus, it becomes even more important to promote and develop creativity and independence further in the vocational training without any gaps. Creative problem solving based on theoretical specifications in the school routine must change smoothly into practical learning and work based learning to find creative solutions also for the problems in the working environment independently. In that sense our project shall contribute to introduce successful examples of practicing WBL and to develop ideas to introduce and spread the knowledge cross border.

2.2 General presentations of the partner countries

Germany

The dual educational system practiced in Germany corresponds precisely to work based learning principles, which nowadays come to the center of general interest in Europe. WBL is regarded advantageous for supporting and organizing the transition from school to the labour market in a positive way. The close combination of education and working world supports training of qualified employees adapted to the needs also under consideration of regional needs.

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Film: "Strengthening vocational education, creating prospects – an international engagement of the Federal Government (of Germany)"

German

English

Although WBL is practiced in different situations, the main focus is on vocational training. We distinguish three different approaches:

1. **Training of apprentices** (dual vocational training): It is a formal educational channel, in which educational contents are combined with contents taught in school and in enterprises, which leads to a nationally recognized educational degree. As a rule, this end educational channel is known in Austria and Germany as the "dual system". The system is based on companies as suppliers of professional education and further education together with profession forming schools or other education-/ training institutes. In these programs, the trainees spend a remarkable amount of time for work-related trainings and practical activities in enterprises. Participants/trainees gain general and vocationally orientated knowledge and additional practical abilities and key competences in profession forming schools simultaneously or in "changing" periods.
   This model stands out for a high intensity or frequency of real work situations.
2. **School based vocational education with learning phases at work:** This form of education contains mandatory or voluntary internships of different duration in companies and leads to a formal qualification as well.
   These internships are on an on-the-job basis education and contain obligatory or optional training elements, which lead to formal qualifications. They can be of different durations, yet as a rule they make up less than 50% of the education duration (often 25% to 30% or less). They shall primarily serve as effective School to-Work mechanisms, which make it possible to familiarize the young people with the working environment and therefore foster the transition process from education to occupation.
3. **WBL at school:** Undergoing this approach, trainees gain practical experiences on the spot in the educational institution via WBL, e.g. in educational restaurant projects in which "real life" is simulated, as well as in real projects from the working environment being carried out in laboratories and in workshops. It aims on creating work environments as genuine as possible, to cooperate with companies and customers and to develop entrepreneurial skills.
   In this approach, schools or educational institutions are mainly responsible for the establishing or imitating real life or real working environments. The educational institutions conduct both theoretical as well as practical parts of education and prepare trainees for their final examinations.

In Germany, "**dual education**" is practiced in all federal states. Although trainees are contractually tied to a company, the education in the dual system is carried out at two studying places, the company and the vocational school. The learner in dual education is referred to as "trainee" or as "apprentice".

In Germany, Austria, Switzerland and South Tyrol (Italy), vocational training contracts are required as a basis for vocational training in the dual system with businesses. The choice of the vocational school to be attended depends on the place or the regional membership of the company. The largest part of practical education for the trainees is arranged in the companies, the vocational school is predominately in charge of the theoretical part. Further, it is also possible for trainees to acquire additional qualifications in many vocational schools.

The education in the company takes place three to four days a week (depending on the requirements of the profession and the training year). One to two days of vocational school per week are offered, depending on the legal regulations of the federal state. Alternatively, so-called "teaching by topics" is carried out. This means that the trainees or apprentices are in school exclusively for up to eight weeks in a row. Often school periods are completed by practical education outside of the company in educational institutions owned by chambers of handicrafts. These industrywide courses shall compensate for education deficits, which have arisen from the specialization of many companies. Three to four weeks per annum can be the duration of such courses. Some courses are required by training regulations, depending on occupation (for example welding courses or courses in motor vehicle mechanics), others are voluntary.

IRELAND

Most of the learners with special needs" walk the same TVET path" as the majority. All learners will have an individualized learning plan, and personal support and counselling. Mostly it is not an issue to get such education what is needed but particularly for the handicapped, it is hard to find work.

You can find information on our system on the site of our National Agency for Education: **http://www.oph.fi/english**

Here's one from there:

Support guarantees equal opportunities to complete upper secondary education and training.

The National Core Curriculum for Upper Secondary Schools (2003) emphasises the fact that the purpose of special support is to help and support students so as to guarantee them equal opportunities to complete their upper secondary school studies. Once a student's learning difficulties have been identified, planning and implementation of support measures are started immediately, taking into account the information acquired on the student's study performance and their needs for support during basic education. The local upper secondary school curriculum will determine how instruction and support measures for special needs students are to be organised.

All students in vocational education and training have the right to receive sufficient personal and other educational guidance as needed. Vocational institutions are required to pay particular attention to the counselling and guidance of students with learning difficulties, absences from school or problems with everyday life.

Students in need of special educational or student welfare services are provided with an individual education plan. This plan must set out details of the qualification to be completed, the requirements

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and scope of the qualification, the individual curriculum drawn up for the student, as well as the student welfare services and support required for studying.

Vocational special needs education and training is primarily provided in regular vocational institutions with all other students. There are seven separate vocational special schools. These provide special facilities and services to promote the vocational education and training primarily for students with the most severe disabilities or chronic illnesses.

Finland

WBL Omnia

VET Reform in Finland, emphasis on WBL

The Government of Finland has five strategic priorities with which it aims to achieve the objective of bringing the Finnish economy into a path of sustainable growth and higher employment and to safeguard financial resources. Within the priority of Knowledge and Education, the reform of vocational upper secondary education entered into force as of January 2018. Crucial is the shift from a system-centered approach to a competence-based one.

This new reform will allow learners to address their individual competence needs by offering them the opportunity to acquire qualifications flexibly, attending programmes in education institutions, workplaces and in digital learning environments. The role of work-based learning will be strengthened - it is an integral part of all VET. A new training agreement mode will increase the opportunities for studying at workplaces. Existing apprenticeship training will become more attractive since the competences acquired through training agreements or apprenticeships will be demonstrated in practical work situations and assessed by teachers and working life experts.

Digital learning environments and tools as well as new approaches to pedagogy (e.g. modern simulators) will have a larger role in the future of learning. In the future, the number of qualifications will decrease, and qualification content will be broadened. This supports designing individual study paths and enables more rapid responses to the changing competence needs in work life. The significance of learning occurring at workplaces is being increased and new learning agreements are applied. Two types of agreements are in use. In apprenticeship training competences are acquired mainly in workplace with a learning-by-doing approach and the learners gets paid for the work.

Other learning environments e.g digital learning are applied to support the learning whenever needed. A training agreement for acquisition of skills through practical work tasks in a workplace is made by an education provider and a workplace and made for a defined part of studies while other studies are conducted with the education provider. The student is provided with an opportunity to acquire vocational skills in accordance with his or her personal competence development plan (PCDP). Combination of apprenticeship and other training is possible in a flexible manner.

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Current WBL Implementation

Omnia is a member in the consortium developing and tailoring Work-Based Learning over the period November 2017 – December 2019. The project titled the Best Services (Parasta palvelua), led by Keuda Group, creates operational practices related to apprenticeships and prepares and revises the learning related contracts. The processes, including contracting, are streamlined and harmonized with an aim to enable the education service provides carry out the VET reform in an efficient way. Through four regional networks, this development programme supports education service providers in introducing and implementing new operational models.

The project is part of a Set of Projects under the heading 'the Best' within which digital guidance (Parasta digiohjausta), digital support (Parasta digitukea) and competence development (Parasta osaamista) are being addressed to support the education service providers in reforming their work. New and closer ties with the working life are being strived for to assure high quality VET and communication will be used in a determined way to share the development results.

The project titled 'Ohjaan.fi' was coordinated by Omnia in 2016-2017 and the site is intended to support learning and guidance at workplace. In vocational education, workplaces, workplace tutors/ counsellors and work communities collaborate with teachers. The content of the site has been collected utilizing the latest research data related to on-the-job learning, workplace tutors' feedback and the good tutoring practices of working life. The content and materials serve the entire field of vocational education and training. Apprenticeship contents can also be downloaded from the site.

Pedagogical/methodological insights

The principle of work-based learning is to gather and enhance knowledge and skills in an authentic working environment. In addition to providing the skills and competences, an important aim is that the duties taken on will generate a need and motivation to upgrade one's skills even further. Compilation of the right kind of duties and tasks will assure that the level required for a competence-based certification is achieved and in this process the support, guidance and coaching services of the teacher and workplace tutor are pivotal. In addition to getting a certification, any learner is supposed to acquire key skills in lifelong learning. The learning process is evaluated throughout the study period and the process completed by demonstration of the competence.

All the parties involved in the process, learner, teacher, working life and education service provider, benefit from this kind of an approach to learning in many ways. The approach is practice-oriented and enables the student to gain during the studies a set of skills needed in working life. The teacher can widen the professional profile by new guiding and coaching duties and enhance his/her substance knowledge by active involvement with the business community. Companies foster labor force that meet their specific requirements and can recruit the best learners, they can build and reinforce their employer brand and create new, mutually beneficial partnerships as well as upgrade the skills and competences of their own staff involved in the learning process. As far as education service providers are concerned there are several advantages e.g. pedagogical practices are developed and collaboration between teachers increased. The teaching and guiding resources are allocated to support the needs of each learner on an individual basis which will enable completion of studies as planned and boost employability. Service providers are informed of the changing needs of the working life and, subsequently, the necessary moves can be made to satisfy the business community's needs. Work-based learning is about linking formal, informal and non-formal learning and is created in a network of partners.

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WBL is also a tool in preventing marginalization. Project 'Plan B – back on track' targets male learners who face difficulties in finding a field of interest or in carrying out their studies because of difficulties or vulnerabilities. An alternative practical approach where practice comes before theory is offered.

Links

- **http://www.cedefop.europa.eu/en/news-and-press/news/finland-major-vet-reform-approved**
- **http://minedu.fi/en/reform-of-vocational-upper-secondary-education**
- **http://minedu.fi/tyopaikalla-oppiminen**
- **http://minedu.fi/en/article/-/asset_publisher/ammatillisen-koulutuksen-reformi-uudistaa-koulutuksen-vastaamaan-opiskelijoiden-ja-tyoelaman-tarpeita**
- **http://minedu.fi/documents/1410845/5970275/Koulutussopimusmalli+EN/d0d124cf-c0e7-4e38-b626-013d7c7931d4/Koulutussopimusmalli+EN.pdf**

- **http://minedu.fi/documents/1410845/5970275/Oppisopimusmalli+EN/cd041c8c-5a71-4904-9d53-eb57cc462221/Oppisopimusmalli+EN.pdf**
- **https://www.oppisopimus.fi/parasta-palvelua-kehittamisohjelmalle-okmn-rahoitus/**
- **https://www.omnia.fi/tietoa-omniasta/hankkeet/osaamisen-kehittaminen/parasta-palvelua**
- **https://www.omnia.fi/tietoa-omniasta/hankkeet/osaamisen-kehittaminen/parasta-digiohjausta**
- **https://www.omnia.fi/tietoa-omniasta/hankkeet/osaamisen-kehittaminen/parasta-osaamista**
- **http://www.osao.fi/osao/hankkeet/kaynnissa-olevat-hankkeet.html?hanke=parasta-digitukeahttps://mailchi.mp/300781763dfc/uudistutaan-yhdess-uutiset-218?e=62edd3f110**
- **https://ohjaan.fi/en/home/**

ITALY

EURO-NET, GODESK

In Italy, the work-based learning is mandatory for students in high schools.

The National programme named "Alternanza scuola-lavoro" by the Italian Minister of Education is aimed to young people between 15 and 18 years that are introduced to work-based learning experiences and it is run by the school organisations for its students. There is a specific pathway including formal learning about job together with learning on the job.

What is "Alternanza Scuola-Lavoro"?

It means alternate School and work and it is an innovative teaching method that, through practical experience helps to consolidate the knowledge acquired at school and to test the attitudes of students in a specific field, to enrich their training and to orientate their studies in a future career vision, thanks to projects in line with their study plan.

It is compulsory for all students and students of the last three years of high school, including high schools. It represents a cultural change for the implementation of an Italian way to the dual system, following good European practices and combining them with the characteristics of the Italian productive and socio-cultural context.

History

- In 2015 the system became compulsory for students in 3rd year of secondary schools – 400 or 200 hours in last 3 years of study
- In 2016 it became compulsory for students in 3rd and 4th year of secondary schools
- In 2017 it is compulsory for all students in last 3 years of study: about 1.5 million students in Italy.

Regulation

A specific regulation, composed by 7 articles, is dealing with rights and duties of the students during the activities of "Alternanza Scuola-Lavoro" in the last three years of high school.

It is focused on the need to better inform students and parents for a better and mutual dialogue and sharing within them and school system.

The girls and the boys, engaged in Alternanza, are introduced in adequate and safe training environments in line with the persons growth and consistent with the study plan.

Students will have the right to express, at the end of the course, an evaluation about the effectiveness and coherence of the path carried out in respect to their own study address.

It is planned a support by a tutor from the hosting company i in relation to the risk of the activities carried out as follows:

- 5 students for each internal tutor, for high-risk activities
- 8 students for each tutor for medium-risk activities
- 12 students for each tutor for low risk activities

In return, the students have some duties such as:

- attend the activities for at least three quarters of the scheduled hours,
- comply with the rules on hygiene, health and safety in the workplace
- maintain confidentiality in relation to data, information and specific knowledge of the companies visited.

The students and students will also be insured against the accident and covered by third-party liability insurance.

In each school, a special commission will monitor compliance with the rules.

National register

In order to facilitate the meeting of students and enterprises there is a free public register named "Registro Nazionale per l'alternanza scuola-lavoro" and it is realised by the system of the Chambers of Commerce. **Link: http://scuolalavoro.registroimprese.it/rasl/home**

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EUROPEAN COMMISSION AND WORK-BASED-LEARNING

In order to define the European vision, please look at the following documents by European Commission.

Policy priorities in vocational education and training (VET)

- Work-based learning: High-performance apprenticeships & work-based learning: 20 guiding principles
  http://eqavet.eu/workbasedlearning/GNS/Home.aspx
- Work-based Learning Handbook
  http://ec.europa.eu/dgs/education_culture/repository/education/policy/vocational-policy/doc/alliance/work-based-learning-in-europe_en.pdf
- Bruges communique:
  http://ec.europa.eu/education/policy/vocational-policy/doc/brugescom_en.pdf
- Riga Conclusions:
  http://ec.europa.eu/education/policy/vocational-policy/doc/2015-riga-conclusions_en.pdf
- The New Skills Agenda for Europe:
  http://ec.europa.eu/social/main.jsp?catId=1223&langId=en
- Investing in Europe's Youth:
  http://ec.europa.eu/social/main.jsp?catId=950&langId=en
- The European Pillar of Social Rights:
  https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union/european-pillar-social-rights_en
- The European Framework for quality and effective apprenticeships:
  http://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=2873
- European Alliance for apprenticeships:
  http://ec.europa.eu/social/main.jsp?catId=1147
- Reports on apprenticeships:
  http://ec.europa.eu/social/main.jsp?catId=1147

More information can be found at:

- **http://ec.europa.eu/education/lifelong-learning-policy/vet_en.htm**
- **http://ec.europa.eu/social/main.jsp?catId=1146&langId=en**

CASES OF WBL IN ITALY

Case #1: WBL at Italian National Institute of Health

In the framework of the national project "Alternanza scuola-Lavoro", 20 students from two secondary schools in Rome were involved for 70 hours in several activities at Italian National Institute of Health.

The Italian National Institute of Health's mission is the promotion and safeguard of national and international public health through research, surveillance, regulation, control, prevention, communication, counselling and training activities.

The students took part in 8 different areas during their training:

1. Prevention measures of sexually transmitted diseases (questionnaires, telephone hotline, update)
2. Addictions: alcohol, smoke, drug (participation in activities in some centers)

3. Molecular medicine methodologies (analysis and data-base collection)
4. Control of water for human consumption (analytical activities for check)
5. Creutzfeldt-Jakob disease (activities on register and laboratory)
6. Nutritional education programme (laboratory activities)
7. Vaccine and diseases (participation to several phases of research and development)
8. Muscular dystrophy: research on cells (laboratories experiments).

Comments from students

Thanks to the tutors the experience was engaging and stimulating. During the experience the activities became more and more complex but ever under a professional guidance. The working experience permitted a better knowledge of work organization.

Comments from tutors (from school)

The collaboration with the institute was interesting since the projecting phase. It was possible to build up interesting and stimulating pathways for students with several options and also to adapt the pathways to the coming needs.

Comments from hosting institute

It was possible to offer a multi-disciplinary pathway in several areas interesting for the public health. Students were choosing within several alternative pathways and the participation was really active. Relevant biomedical competences were acquired by the students.

Source 15/07/2018: **http://www.istruzione.it/alternanza/_RMPC150008.html**

Case #2: Foundation Its "A. Cuccovillo" – ITS for New Technologies for Made in Italy – Mechanic – Mechatronics System (Energy)

The foundation is focused on high VET and involves a large number of associates. It was born in 2009 after a national call for High-VET institution provide by the Italian Minister of Education.

Since November 2011, the foundation is organizing and managing a learning pathway that is designed together with companies.

The programmes delivered are:

- Higher technician for integrated automation and mechatronic systems
- Higher technician for innovation of mechanical processes and products
- Higher technician for production managers (together with Bosch group)
- Higher technician for production process, continuous improvement and Supply Chain

The didactical offer includes some training units about soft and cross skills, English language, communication, project management, work in team, problem solving, negotiation techniques.

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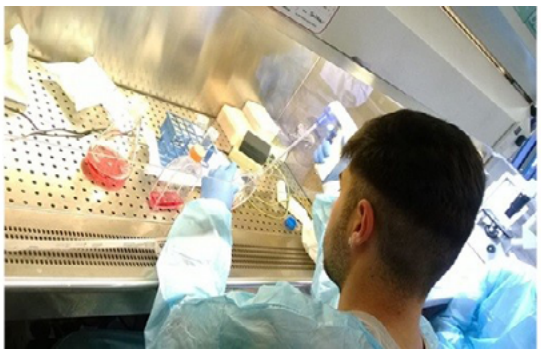


The Training methods are various and include:

- frontal lessons
- in-company lessons
- workshops
- teamworking
- internships and work-based learning
- company visits and visits to exhibitions
- etc.

Management of training

Trainers are selected through a regional bid. First, they must apply and fulfil specific requirements, like for example a minimum experience (3 years teaching, if coming from schools/university; or 5 years experience, if coming from the labour market). Second, a further selection is carried out by an internal commission, appointed by the Foundation. Selected trainers are included in a public roster.

Management of relationships with triple helix stakeholders

Relationships with stakeholders are kept at several levels, and depending on everyone's responsibilities:
President, Executive board, Director, but also co-ordinators and tutors.
The Foundation, like ITS Makers, is among the founding members of the Italian network of Mechatronics ITS providers.

Special links towards university

ITS "A. Cuccovillo" developed a permeability system, in order to ease access to university after graduation in its courses. Based on agreements with local universities, comparison tables has been devised, in order to easy identify credits spendable in bachelor and master degrees, where required.

Source:

- **http://www.itsmeccatronicapuglia.it - http://www.projectshine.eu/**
- Image Source 02/08/2018: **http://www.itsmeccatronicapuglia.it**

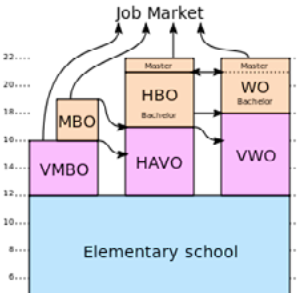
THE NETHERLANDS

"How WBL as a method is in use vocational/further training in The Netherlands."

Jos Jaspers und Piet Kommers

Utrecht Universität, Die Niederlande

In order to understand well the positioning and rational for vocational education and training in The Netherlands, it is essential to see its place in the configuration of the two-tier Higher Education (Professional versus Scientific) and its preparatory stages through HAVO and VWO respectively. For a comprehensive exposition, see **"Education in The Netherlands"** and **"The Dutch Education System."**



Vocational training in The Netherlands is inherently based upon the two elements 1. Work to Learn and 2. Learn to Work; They are seen as two inextricable facets for an adequate anticipation to the initial job qualification of youngsters at all three levels of Vocational Education and Training from the early sixties in the 20st century.

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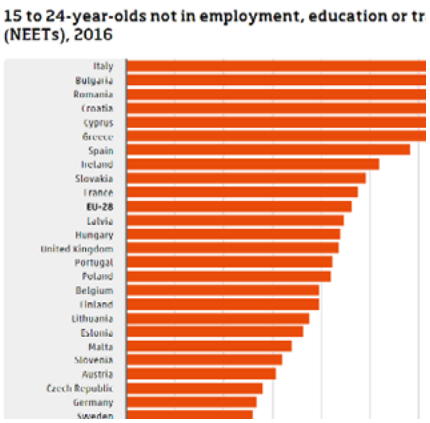
Pre-vocational Education and Training. The Dutch usually refer to it by its abbreviation mbo. Pre-vocational education and training is known as "Voorbereidend Middelbaar Beroeps-Onderwijs" (vmbo). The Dutch mbo sector consists of 70 colleges. Regionale Opleidingencentra (ROCs) are multidisciplinary colleges offering VET in technology, economics, personal/social services, health care and adult education. Agricultural VET colleges offer vmbo and VET in agriculture and food technology. Specialised VET colleges offer programmes for a specific branch of industry, such as graphic design, butchery, house painting, furniture painting and transport. The duration of VET programmes varies from six months to four years, depending on the level and the requirements. There are four VET levels: Level 1: entry level. Level 2: basic vocational training. Level 3: full professional training. Level 4: middle-management and specialised training. There are two VET learning pathways: The school-based pathway (BOL) and the work-based pathway (BBL). Work Based Learning (WBL) is compulsory in both pathways and can only be offered by a recognised training company.

Secondary Vocational Education covers four levels: Level 1: assistant training; Level 2: basic vocational training; Level 3: professional training and Level 4: middle-management training. Practical training and classroom learning: For each MBO course there are two learning pathways: vocational training, where practical training takes up between 20% and 60% of the course; and block or day release, where practical training takes up more than 60% of the course. MBO (Middelbaar Beroeps Onderwijs) is the abbreviation for secondary Vocational Education and Training (VET) in the Netherlands. VET is the main supplier to the labour market and is often regarded as the 'foundation of the economy' and the 'backbone of society'. Approximately 40% of the Dutch working population has completed a vocational course to at least a secondary vocational training level.

The TVE: **Tertiary Vocational Education** in The Netherlands is part of "Higher Education" is provided by "Universities of Applied Sciences" and as such competes with the scientific-oriented Universities. Typically, students after succeeding a TVE bachelor degree, can undertake a pre-master mitigation course for finally entering a full university master degree and even PhD degree after all.



Corporate VET: Vocational Education and Training. Compliant to the EU policy towards VET, The Netherlands shows continuous efforts to bring VET in the reality of the labour market. It is recognized that enterprises cannot invent and implement full-blown courses and job-training by themselves all the time. For that reason, a number of curricular development corporations have emerged. Some of them are branch-specific (e.g. VAPRO or LSBL) and some are domain generic like SLO. The Dutch 'Central Bureau for Statistics' (CBS) provides regularly data on the success / failure of VET in school- and corporate settings. For instance its recent message that 4% of the Dutch youth is not in employment, education or training. It also shows the distribution of youth unemployment in the EU member states. In summary to the question "How does WBL as a method is in use vocational/further training in The Netherlands?:

VET in The Netherlands as element in regular secondary and tertiary education has a long history of 'dual learning approach' where institutional theoretical underpinning and work-place learning go hand in hand. In many cases, already in this brittle stage against drop-out, employers adopt promising students and mentors him/her through mastering the formal skill/knowledge/attitude at the institutional level; e.g. **The School Factory**.

VET as corporate effort for training, retraining and transformative training in The Netherlands, focus on concrete talents for concrete jobs. Rather than curricular and instructional dominance, it is the concrete job performance that help novices to overcome earlier traumatic learning-failure experiences and eager to succeed in practice.

EUROPE

www.na-bibb.de
Publication "Work Based Learning in Europe" (English)

2.3 VET schools/institutions working in partnership with companies

Teachers from VET schools or training institutions like SBH Südost are required to coopereate with companies. FA-Magdeburg is active in this field for more than 16 years to cooperate, to give trainees opportunities for work in practices, processes, using modern equipment and technologies. Examples of the last 10 years are to be found in the fields of IT services, cocking, gastronomy and hairstyling/ Hairdresser (barbers). Young people could see/feel the results of their own work and reflect on situations with real clients. In touch with work and/or problem-based learning some learners felt the relation between learning theory and need in practice for the first time. We can underline the Publication of EU chapter 2. The right skills for learners… the right skills for companies. In October a trainee will finish his 2 years work-based learning (practice) as IT-Administrator in FA-Magdeburg and will then be employed by SBH Südost.

2.4 Development of modern learning tools to support work-related learning for the learning disabled

For learning-disabled young people, access to and use of modern techniques and modern learning methods must be guaranteed for work-based learning. Therefore, we have tried to develop a special learning software.

With the help of learning software in the vocational training of young people with learning disabilities or learning-disabled young people acquire specialist and key computer skills.

Basic idea

Actually "learning disabled", but can independently acquire specialized and key qualifications in vocational training ..., then even with the help of the computer ...!?
Is that possible?
New technologies and media have long been firmly established in the educational landscape.
They provide many individuals with access to information.
It is an advantage to think in terms of structures and to have learning techniques.

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In modern society, a third cultural technique has developed: PC use!
The way of acquiring knowledge is changing.
Today, NOT only people convey knowledge.
So far, every hard learner acquires a given knowledge structure, because the learning object was prepared in a didactic-methodical way. The mediating person decides what, to what extent, should be learned and determines the way of appropriation.
At the same time, this person gives the learner the feeling of security through continuous feedback.
Today and in the future, learning is becoming increasingly self-responsible.
Independent knowledge acquisition during the work process is important. (PC use) Self-employment is a key qualification. If there are any disabilities in learning, then the request "Get what you need!" is an excessive demand.
SBH Südost GmbH has decided to develop a special learning software.
To exclude learning disabled young people at work with the PC would be a new disadvantage. Especially when using multimedia PC technology, opportunities for development opportunities for self-responsible learning organization through self-employment become apparent. Improving the job opportunities of young people with learning disabilities through general, professional and social skills is not achievable today without the use of new technologies and media.

A focus of the practical vocational training is the development of the work activity.
It should also be the central subject of the target group-specific software.

The work activity was chosen because:
- Qualification itself is the goal;
- their development is only possible through them;
- it is the leading activity of young people;
- their qualification is seen in correlation to the development of mental processes,
- It can / must be tied to communicative processes and thus develops social skills;
- it has a value-adding aspect and learning becomes personally relevant again in this context;
- their development happens in direct proportion to the self-employment training.

Requirements for educational software

Which different prerequisites have to be taken into account?

1. **The focus is on the structure of work activity!**
   It is a purposeful activity.
   The learning software has to guide through the work activity and thereby help to solve difficulties in the stages of orientation, planning, execution and control.
2. **The knowledge connections must be transparent, visualized and comprehensible with the aid of the cognitive operations differentiate, abstract, generalize and classify!**
   This involves the formation of concepts (for example, from materials science, tool science) and the acquisition of technological processes.
3. **Individual performance requirements must be considered!**
   This refers to the qualitative peculiarities of the activity that can hinder learning.
   They express themselves in concrete terms:

   - the qualities of mental activity, such as speed of reaction, flexibility, sensitivity, accuracy,
   - the degree of cognitive operations, such as differentiating, abstracting, generalizing, classifying,

- the linking of concrete-intuitive and abstract-verbal components of mental activity,
- peculiarities of perception, language, memory, the emotional-volitional sphere.

The peculiarities mentioned have something in common in the effect: They lead to an orientation disorder in activities
The learning program must be able to dissolve obstacles in the interactive process for the concrete work activity!

4. **The learning program must meet the demand for high degree of internal differentiation!**
   In the work activity the effects of the orientation disorder, difficulties in the individual stages (orientation, planning, implementation, and control) have to be dealt with.
   Ensuring the orientation on the way to the realization of the work task must be ensured by the complexity and internal networking of the program.
   It is intended to equally encourage and encourage both the easier learner and the harder learner (learning in the "zone of current and subsequent development").
5. **In the learning program, the learning stages of the learning process must be able to be developed according to needs!**
   Work activity is based on the appropriation of a complex system of voluntary movements and involves, in addition to externally perceptible motor skills, the development of general behaviours that are tied to the conscious grasping of the internal logic of the manufacturing process.
   The basis for this are mental actions:
   The worker records and surveys cause-and-effect relationships only when he has structuring resources. These means must be remembered linguistically, i.e. to be represented in a form that is lifted from concrete-intuitive thinking.
   There is a need for development for adolescents with learning disabilities.
   They focus their attention primarily on unimportant details, thereby not adequately grasp connections and thus can not adequately remember them. The knowledge is therefore insufficiently networked and poorly structured.
   Young people remember less, they recognize more.
   The development of the linguistic parts succeeds by the complete unfolding of the corresponding learning level (linguistic representation of action).

Performance of the learning software in and for the dialogue with the adolescent - using the example of the cube

Our concrete learning software was developed for the process of manufacturing a cube (with base plate, as a paperweight) in the field of metal technology. In the production of this cube, the first experiences in the field of metal can already be made in vocational orientation and preparation. In the course of this production, the most important craftsmanship skills can be practiced and strengthened. In addition, the young people have the opportunity to familiarize themselves with the tools and the work equipment. First basic operations for metal working can be repeatedly shown and tried out, e.g. tearing, drilling, graining, sinking and cutting threads. The respective basic skills of manual metalworking have already been explained by the instructor in advance. Even inexperienced youngsters have in the production of this cube after a short time a sense of achievement.

Regardless of the example, a learning software must include the following services:

1. The learning software ensures orientation in the realization of the work task. Neither goal nor path can disintegrate due to obstructive conditions. The adolescent can focus on each step of the way, fully developing his knowledge, skills and abilities. With information needs he will seize auxiliary possibilities independently.

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2. People with learning disabilities have problems switching from one operation to another due to the peculiarities of the course of mental processes. The step-by-step constellation in the program gives orientation and thus motivation.
3. As a result of the step-by-step development of the sequence of actions, a complete action concept is created, which the young person has developed independently. He or she consciously experiences the process of manufacturing processes. With constant use, these processes become the internalized algorithm (thinking in invariants and variants). Thus, in the medium and long term, qualitative and quantitative developments in terms of o. G. to expect mental processes in the activity.
4. The young person is required to formulate and fix the actions to be planned in written language. This means: the work process and work results are anticipated mentally. The passive vocabulary is activated by written language communication. The speech acts in the subsequent conversation with the instructor - in addition to the brain-functional background - structure and support memory.
5. Using the modified questioning method, the adolescents independently recognize gap in their knowledge and independently request information to answer the questions.

   The key questions are questions that

   - apply the competences necessary for task solving,
   - guide the adolescent so that he understands the content and can plan the task independently,
   - are variable so that guessing can be ruled out,
   - can be ordered according to difficulty levels,
   - not only query knowledge, but can also convey knowledge through targeted processing,

6. The focus is on goal-oriented learning.
   A concrete work task is to be mastered successfully.
   The program guides the user, keeps the orientation stable.
   Nevertheless, independent work / learning is guaranteed without outside help.
   The teenager learns in the own time.
   This means that he successfully reaches the goal without time pressure. The time needed is for him orientation, whether he still has to practice.

With this learning software, the adolescent organizes the process of learning by himself.
You learn independently and according to your needs. This is possible because the software developed helps to resolve disabling conditions in learning.
The only requirement is the availability of individual work skills. This can usually be done by the target group.

There are few traditional and modern learning media that enable learning-impaired children and adolescents independent learning. The development of such learning media is complicated, very labour-intensive and needs expert teams. It asks, “is that worth it?” We are convinced that in our time, in which the mastery of communication technologies is becoming a third cultural technology, target group-specific software development must finally be taken seriously by society as a whole.
Experience has shown that “it has never been profitable at all” to save on education.

Integrated Learning, Information And cooperation System (ILIAS)

The central element of the **ILIAS** concept is the creation of a flexible learning and working environment with integrated tools. Learning should not take place in courses alone. Rather, ILIAS is based on the idea of a library and enables the provision of various learning and working materials in all areas of the system.

ILIAS is not a black box, but an open knowledge platform and comparable to the Moodle platform. See details in the manual for web2.0 Tools (IO2)

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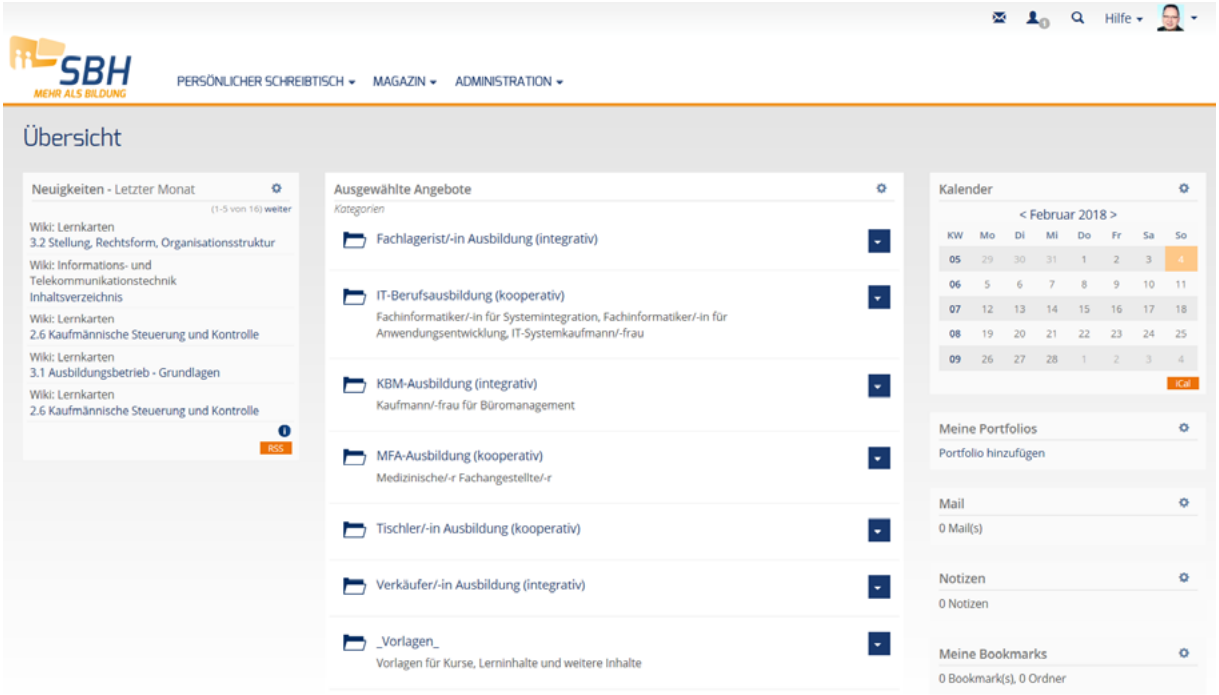
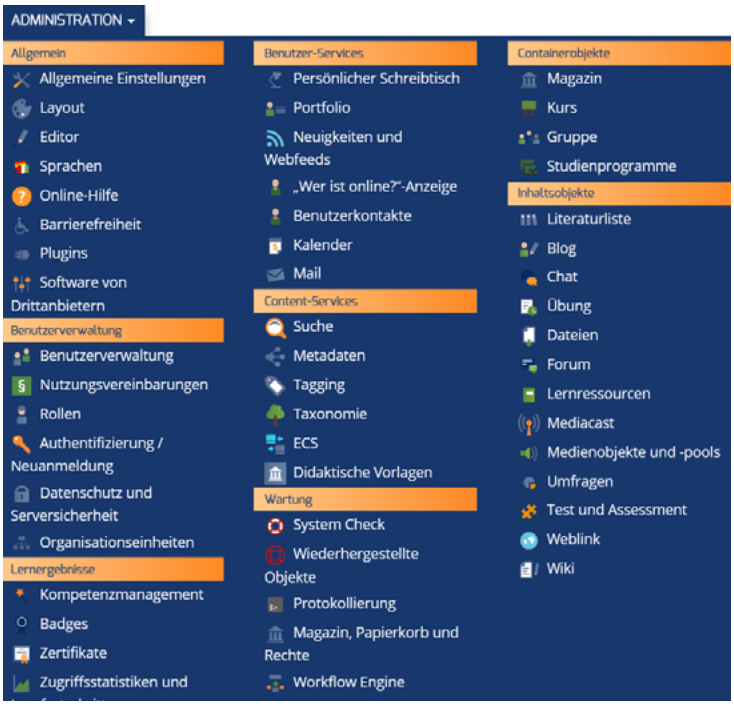
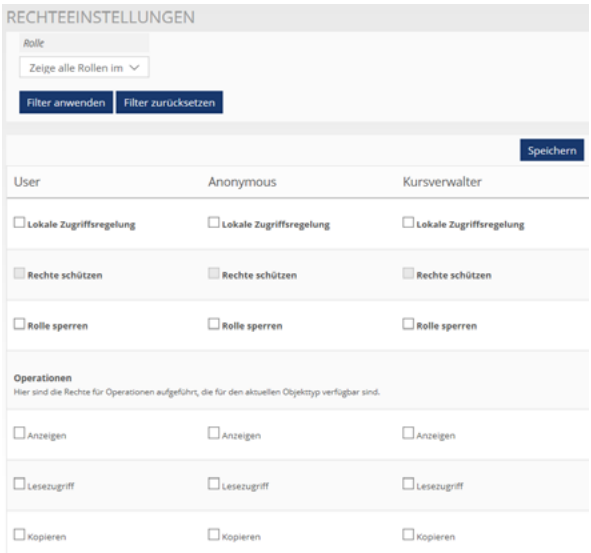


- **ILIAS is versatile:** course management, learning modules, tests and exams, portfolios, surveys, wikis and blogs are all available and make ILIAS ideal E-learning solution “from a single source”.



- **ILIAS is open-source:** you never have to pay royalties. Special requirements can be implemented by official service providers for you. Voluntary membership in the ILIAS Association is cost effective and allows you to directly influence the development process. **www.ilias.de** in eight languages.

- **ILIAS is yours:** change the look, implement your learning scenarios, integrate it with your website or intranet. Activate only the modules you need and give each of your users the desired editing and usage rights.



- **ILIAS complies with standards:**
  SCORM 1.2 and SCORM 2004 learning modules. LOM metadata. IMS QTI tests and exams. XML, CSV and Excel exports of your data. IMS LTI for integration of external applications. Once installed, ILIAS runs completely in your internet browser. No additional software is needed - neither for learners, teachers nor content creators.

- **ILIAS is an LMS** that meets your needs: 100 or 100,000 users. Desktop or mobile use. Use it as a simple course player, as a complex authoring tool, as a full-fledged collaboration platform - or as a free combination to your liking.

The most important features

- Full support of **SCORM 1.2** and **SCORM 2004**
- **Powerful exam tool** that allows you to check your own learning level as well as complete e-exams
- Flexible **course management** for a wide range of didactic scenarios
- **Study programs** allow the mapping of complete training courses with a single tool
- Easily share content with lightning fast **file upload via drag & drop**
- **Personal workspace** for learners where **portfolios und blogs** can be created quickly
- **Easily create** learning and exercise materials with authoring tools: Build learning modules, wikis, glossaries, and more…
- **Consistent design:** Despite their different application options, all tools in ILIAS are uniformly designed, making it easier to explore new learning scenarios!
- **Learning communities** that bring your learners together…
- …based on the **integrated communication tools**: personal profiles, contacts, who-is-online? Tools, mail, chat and more
- A rights system makes it possible to precisely control the access and usage options of all content and tools
- **No lock-in:** All your data can be exported in XML format.

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References:

Texts - **https://www.ilias.de/**

Illustrations - **https://lms.dresden-chip-academy.de/**

Pictures - **https://www.ilias.de/**

Chapter 3.

Examples of putting WBS into practice by the project partner SBH

Work based learning can be conducted at an educational institution like SBH Südost GmbH (foundation education and skilled crafts). For example, educationally handicapped teenagers receive an education in the available workshops, education restaurants and other educational spaces. These teenagers also take part in professional school lessons in relation with the concept of dual education. Hence, this form of teaching represents a special form of dual education. The educational intuition (SBH in this case) takes the place of an educational business, which has a contractual relationship with the apprentice. The theoretical part of the training is support by additional qualified teachers in the educational institution. To offer a work based learning situation also in this form of education, realistic working environments can be simulated in the educational institution in the form of simulated practice companies. These company simulations can also be adapted to regional needs when required.

Company simulations make it possible to develop...

Professional competence

The actual combination of theory and practice opens up a space of experience in which knowledge and action in all sub-areas (e.g. order transaction, entry and sale, order processing, marketing, human resources or accounting) are directly liked to each other and thus learning can be initiated and anchored sustainably. Substantive contexts are clearly recognizable by the concrete experience. The use of commercially available software makes it easy for the learners to transit their knowledge to real work situations.

Social competence

Giving apprentices well-defined possibilities to choose between alternatives of action makes it possible to produce errors and to experience the consequences of making decisions. Learners become aware of the consequences connected to their actions and learn to think and act responsively, solution focused and practice oriented – without causing actual economic damage in a real work situation.

Methodical competence

Communication and conflict resolution skills paly a big role in simulated companies, as well as in real work situations. Simulated companies support personal development and readiness to cooperate with those employees working prior and post the learners' position in the workflow regardless whether they are from inside or outside the own organization.
The possibility to allocate positions in a hierarchical structure makes up a special field of study in simulated companies.
In simulated companies, learners work independently to a large degree and ex-cathedra teaching only takes place on a supplementary and exceptional basis.
Problems arising from the simulated working situation are being analysed individually and solved together.
This way, learners are able to learn from and with each other, to get information and to transfer them to real working situations.

Various working world based forms of learning prepare particularly teenagers and young adults for the constantly changing requirements of the real working world. Thus, it is possible for the apprentices to organize practical project works. To demonstrate how such a project work comes into place, we give an example of how we educate handicapped apprentices in metal work.

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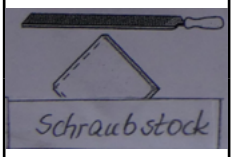
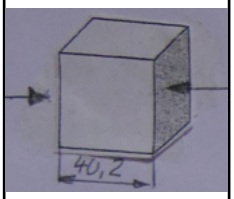
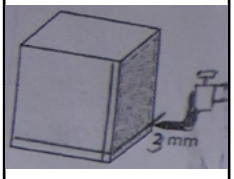
The task of the field of rehabilitation close to the place of residence in SBH Südost in Magdeburg is the professional and social integration of young people with disabilities. We carry out initial training in a total of 8 occupational fields. In the field of metal technology, we train metalworkers and metal technicians. As part of vocational training for people with learning disabilities, we work for example with the project method and the learning guidelines method to introduce the trainees to solving tasks largely independent and thus promote independent practical action. As part of the project work, there is a change between learning and working phases. The interaction of knowledge and skills promotes the sustainable development of skills. The aim is to improve employment prospects for disabled young people by improving the quality of work.

In the project “Production of a cube with base plate” the apprentices shall learn practical skills under real conditions, how a real product is created. It improves important social skills such as accuracy, reliability, ability to cooperate and teamwork. Acquired theoretical knowledge can be transferred directly to practice and applied in the workplace.
The apprentices prepare, plan, execute and evaluate such a project themselves. The mentor accompanies and supports such a work-based learning process.
With the instruction method (learning guidelines method), the instructor provides accompanying material for the project, which contains the instructions for the solution and the necessary technical information.
Thus, the tasks can be worked on practically by the trainee and the related theoretical topics can be put into practice. The apprentices work in groups in a team-oriented manner. They organize the project together and coordinate their activities. At first they also rate their work according to suitable criteria and landmarks.
An important advantage of this method for the instructor is that the instructor is relieved of the repeated transfer of knowledge and thus has more time to deal more individually with the learning progress and difficulties of the trainees. The instructor thus assumes the role of learning advisor. (Moderator)

3.1 Example for planning of the manual production of a cube

Arbeits-schritt	Bild Nr.	Arbeitsschritt/ Technologie	Werkzeuge	Fragen	Antworten
1		Rohmaße kontrollieren Material: blanker Quadratstahl (40mm x 40mm x 40,2mm)		1. Warum werden im 1. Schritt die Rohmaße kontrolliert?	1a: Damit der TN es lernt. 1b: Wenn ein Maß kleiner als 40mm ist, kann der Würfel nicht gefertigt werden. 1c: Der Umgang mit dem Winkelmesser soll erlernt werden.
2		Alle Kanten sorgfältig entgraten. Mit der Feile in Längsrichtung zur Kante feilen. Beim Einspannen im Schraubstock immer Schutzbacken benutzen.	 	2. Warum werden Sägekanten entgratet?	2a: Am scharfen Grat kann man sich verletzten. 2b: Durch den überstehenden Grat erhält man beim Anreißen falsche Risse auf dem Würfel. 2c: Der Würfel rostet durch den Grat stärker.
3		Die gesamten Seiten eben und rechtwinklig feilen. Mit der Spitze der feinen Dreikantfeile im Kreuzstrich über die beiden Sägeflächen feilen. Die Feile durchziehen und mit der Feilenbürste im Anschluss reinigen.	 		
4		Zu allen Kanten 3-mm-Parallelen anreißen. Mit dem Parallelanreißer mehrmals schräg zur Würfelfläche Anrisse nach vorn ziehen.	 		

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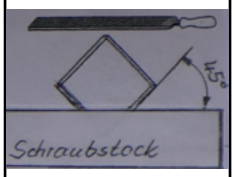
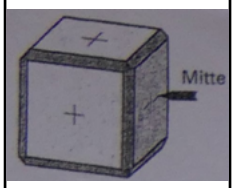
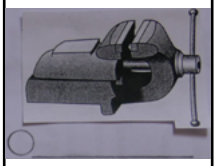
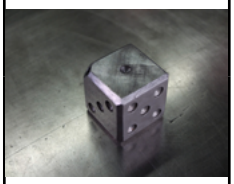
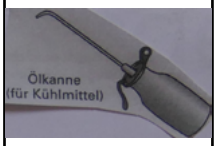
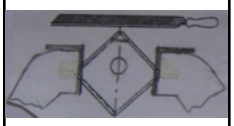
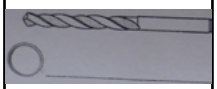
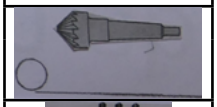
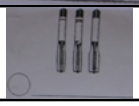
5		Alle Kanten bis zu einem Anriss von 45° abfeilen. Mit der Schruppfeile in Längsrichtung zur Kante bis dicht vor dem Anriss feilen. Mit der Schlichtfeile die Oberfläche der Kante glätten bis zum Anriss.	 		
6		Mit einem Bleistift die nötigen Augen auf alle Seiten des Würfels zeichnen. Auf den Seiten 1, 3, 5 und 6 Mittellinienkreuze anreißen.			
		Wo Augen markiert sind, kurze Linien 10mm parallel zu den Kanten anreißen.			
7		Alle Kreuzungspunkte deutlich körnen. Das Werkstück dabei sehr fest mit Schutzbacken im Schraubstock einspannen.			

8	 	Alle Körnerpunkte mit Ø 7mm sind 3mm tief zu bohren. Vorsicht: Unfallgefahr! Enge Kleidung und kurze Haare oder eine Mütze tragen. Nichts darf lose herumhängen, wie Schmuckstücke, ein Schal o.ä., denn die Maschine kann alles mit sich reißen. Schutzbrille tragen nicht vergessen!!! Arbeitsregeln: Das Werkstück immer fest einspannen. Das Werkstück muss waagerecht liegen. Den Schraubstock beim Bohren festhalten. Den Bohrer immer fest einspannen. Kühlmittel verwenden.	   	8.1. Warum muss eine Schutzbrille getragen werden? 8.2. Warum wird Kühlmittel eingesetzt?	8.1.a: Damit die Blendwirkung der Lampe nicht stört. 8.1.b: Mit schutzbrille können keine Bohrspäne in die Augen gelangen. 8.2.a: Damit der Würfel nicht so heiß wird. 8.2.b: Die Schneiden des Bohrers bleiben gekühlt länger scharf
9		Die Ecke an den Seiten mit 1, 2 und 3 Punkten abfeilen. Dazu den Würfel auf die gefeilten Fasen so einspannen, dass die Ecke exakt mittig steht.			
10	 	Die Würfelecke ankörnen. In die Würfelecke Ø 5mm x 20mm tief bohren. Die Bohrung auf Ø 6,5mm x 90° ansenken.	  		

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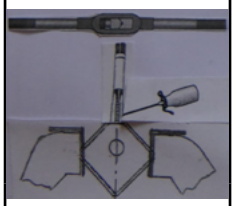
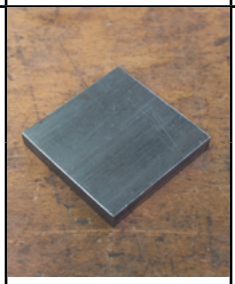
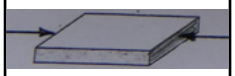
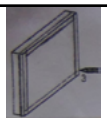
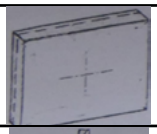
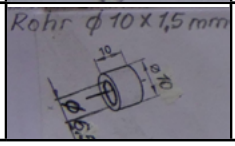
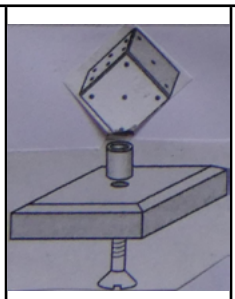
11	 	Gewinde-schneiden mit 3 Gang-Gewindebohrersatz: Der Vorschneider des Gewinde-bohrersatzes wird im Windeisen festgespannt, rechtwinklig in das Bohrloch gedrückt und rechtsherum gedreht, bis er gefasst hat. Von Zeit zu Zeit wird durch Zurückdrehen der Span abgebrochen. Einen Tropfen Scheidöl zugeben! Rechtwinkliges Eindringen mehrmals prüfen.	 		
12		Die Grundplatte: Blanker Flachstahl (50mm x 60,5mm x 10mm) Die Rohmaße der Paltte nachmessen und alle Kanten ……	 		Antwort: entgraten siehe Arbeits-schritt 2
13		Die gesägten Seiten eben und rechtwinklig feilen. Dabei die Spitze der feinen Dreikantfeile benutzen!			
14		An der Oberseite rundherum eine Fase von 3mm x 45° anreißen.			
15		Rundherum die Fase 3mm x 45° schruppfeilen und dann schlichten.			
16		Ein Mittell-inienkreuz anreißen. Die Mitte ankörnen.			
17		Die Mitte Ø 6,5mm durchbohren.			
18		Auf der Rückseite für 1 Senkkopf-schraube M6 senken.			
19		Die Distanzhülsen Ø 10mm x 10mm nachmessen und beidseitig eben feilen.			

20		Alle Teile probeweise zusammen-schrauben. Alle Teile reinigen und lackieren. Alle Teile nach dem Trocknen der Farbe wieder zusammen-bauen.			

3.2 Practical example for WBL including modern means of production (CNC)

In another example, we want to look at the possibilities of job-related work, which is of particular importance for work-related learning within education. To do this, we revisit the idea of making a cube.

A school wants to order a large number (about 100) of stable, resistant and relatively large dice for pupils to play with during their break. (Create offer)

It's about an order with larger quantities, the right material selection, calculation of the costs per piece. Now the use of modern CNC technology in the work process will be presented. The apprentices should learn to create quotes, accept orders, plan their implementation steps from material usage to production and learn how to set up and use state-of-the-art machines in order to be able to use them independently in other work processes.

Production of dice with CNC technology

The training company is a medium-sized machining company with CNC production.

The practice company receives the order from a primary school to produce 100 cubes of metal in the dimensions 30x30mm for play afternoons.

The personnel for the production in a virtual enterprise is broken down as follows:

Divided in:

Management
Management customer order handling production planning with programming
Cutting
Specialist for CNC - Technology
Operating staff for the batch production
Quality Control

The workflows of the production of metal cubes of the arrival are described the semi-finished product in the material store and the duties of the using staff until the completion with CNC technology here.

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The business aspect and the programming of the machines is not represented here, is, however, component of the task. Are part of the CNC qualified employee drawings, calculations and programming and are provided here as teaching aids the construction this one.

The further task description refers to the activities of the **operator (CNC)**.

Three CNC processing machines are available for the production of 100 cubes in the mechanical processing.

- Band saw CNC
- DMU 50 EV with control Heidenhain TNC 430 (5 axis processing center)
- DMU 60 with control Heidenhain MillPlus V410 (3 axis processing center)

Through work preparation all written papers and the sawn semifinished product (raw material) are transferred to the machine and, the externally created programs are transmitted to the machine via data transfer.

The installer (CNC specialist / expert) takes over the main direction until the quality-compliant completion of the first workpiece until handover to the operator with the following start of series production.

After the order has been received, the following tools, materials and aids are available for the installer to start production preparation:

- semifinished material two bars Aluminium- Square in EN AW-2007
- Working drawing cube Zei. Nr. 8-109.313-501
- order technology sheet for order run
- suggestions and sketches of fixing DMU 50 clamping 1 von 2 %109
- suggestions and sketches of fixing DMU 60 clamping 2 von 2 %110
- Machine program %109.H (DMU50)
- Machine program %110.PM (DMU60)
- Clamping device 5-axis- Shoetree (DMU50)
- Clamping device Machine vise (DMU60)
- fastening instep remedy for machine tables
- tool instep means and adapter
- tools according to tool plan
- tool pre-setting equipment

The installer carries out the following activities, one after the other, on both machine tools:

- familiarize with the working papers
- providing, clamping and measuring the tools
- installation of tool holders with tools in the machine magazine
- entering the measured tool data in the tool memory of the machine
- clamping the clamping devices in the machine
- clamping the sawn semifinished product (unmachined part)
- setting up the workpiece zero point
- call and simulation test of the program on the machine tool
- retraction of the program in a single block on the machine tool
- quality control of the first finished part by the installer
- quality control of the first finished part by the quality controller
- release and transfer of the machine tool to the machine operator in the series run, after o.k. of the quality control
- initial control of the operator for proper handling

The **operator** takes over the work task of the batch production after the handing over of the setter up to the series run end.

The operator accomplishes the following tasks:

- familiarize with the working papers
- following instructions of the setter
- mounting unmachined part
- closing door
- start program
- cleaning and quality control of the last part
- put the last part down into the container
- unmounting of the last part after the work process
- cleaning of the clamping device
- mounting the next unmachined part

The quality assurance controls the steady quality levels in bullet points 1, 2, 3, 10 Parts Corresponding documents have to be done for the production and the sale of the sample product (simulated company). Among other things, this consist of the following:

Work steps for the machine operator, drawings and the calculation for sale

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Arbeits-schritt	Bild Nr.	Arbeitsschritt/ Technologie	Fragen	Antworten
1	V-Nr30_ Maschine. jpg	Ausgangssituation: Maschine DMU50, Werkzeuge und Nullpunkt sind eingerichtet, Programm ist durch den Einrichter eingefahren: Arbeitsauftrag lesen, Zeichnung lesen, Arbeitsfolgen und Werkstattdurchlauf verstehen. Einweisung in die Bedienfolge der Maschine durch den Einrichter.	1. Warum werden im 1. Schritt die Arbeitspapiere studiert? 2. Warum wird der Bediener durch den Einrichter eingewiesen?	1a: Damit der TN lernt, mit Arbeitspapieren zu arbeiten. 1b: Damit der TN die Konfiguration des Werkstückes erkennt. 1c: Damit der TN die Qualitätskontrolle fachgerecht durchführen kann. 2a: Um spätere Arbeitsfehler, Spannfehler und Maßabweichungen auszuschließen
2	V-Nr20_ Material_ beim_ Saegen. JPG	In Werkstatt an CNC Bandsäge: Rohmaterial aus Lager beschaffen, Abmaße mit Zeichnung vergleichen, Materialmenge prüfen, 1 Teil =36mm + 2mm Sägeschnitt also 38mm auf Bandsäge Maß 36 zuschneiden (78 Teile aus 3000mm; zwei Stangen) Grundmaterial: Aluminium-Knetlegierung AlCuMgPb (32x32x36)	1. Warum werden im 1. Schritt die Rohmaße kontrolliert?	1a: Um spätere Maßabweichungen (Fertigungs-ungenauigkeiten) auszuschließen
3	V-Nr30_ Spann_ mittel1. JPG	In der Werkstatt an Maschine DMU50: Spannen des Werkstückes in den 5-Achs-Spanner mit seitlichem Anschlag. Lage des Rohteiles = Sägeschnitte (Maß 36) in Richtung oben/ unten. Spannen mit verlorenem Kopf	1. Aus welchem Grund muß das Sägemaß senkrecht ausgerichtet werden? 2. Was ist ein verlorener Kopf?	1. Zum Spannen wird ein größeres Aufmaß benötigt . 2. Der verlorene Kopf wird zum Festhalten des Rohteiles in der Spannvorrichtung für die erste Aufspannung benötigt. Er wird in der Folgeoperation in der nächsten Aufspannung abgefräst.

4	V-Nr30_ Spannen-Werk-stueck.JPG V-Nr30_ Spannen_ Werk-stueck. MP4	In Werkstatt an DMU50 Ausgangszustand: Maschine ist bereits eingerichtet. Einweisung des Bedieners durch den Einrichter wird mit Hilfe der 4-Stufen-Methode: -Vormachen, -Nachmachen, -Üben und Ergebnisse kontrollieren, die Bedienung vorgeführt. Tätigkeit Bediener: Werkstück auf 5-Achs-Spanner an Anschlag (Maß 24) anlegen und Werkstück festspannen. Tür schließen und "START" drücken.	1. Warum wird die 4-Stufen-Methode eingesetzt? 2. Warum muß das Werkstück an den seitlichen Anschlag geschoben werden? 3. Aus welchem Grund wird die Tür vor dem Start geschlossen?	1. Um den Bediener zu befähigen, den Arbeitsablauf fachgerecht auszuführen mit Kontrollfunktion durch den Einrichter. 2. Der Programmablauf geschieht immer an der gleichen Stelle. Eine Überschreitung des Anschlagmaßes würde Ausschuß zur Folge haben. 3. Die Tür schützt den Bediener vor Kühl und Schmiermittel und verhindert den manuellen Eingriff des Bedieners bei vollautomatisch laufender Maschine (Unfallgefahr).
5	V-Nr30_ Pro-duktion. MP4	In Werkstatt an DMU50: Serienlauf, Tür von Maschine schließen, Maschine START, (grüner Knopf) - Prozess-überwachung- dabei Reinigung und optische Kontrolle des zuvor gefertigten Würfels.	1. Ist die Reinigung und 2. optische Kontrolle der gefertigten Werkstücke unbedingt erforderlich?	1. Ein Spannen von Verunreinigungen in der anschließenden Aufspannung würde die Außenflächen (Sichtflächen) des Würfels beschädigen. 2. Die optische Kontrolle verhindert Unregelmäßigkeiten z.B. bei Werkzeugverschleiß.
6	6	In Werkstatt an DMU50: Nach Programmlauf-Ende, Tür öffnen Fertigteil dieser Operation gegen unbearbeitetes Rohteil wechseln. Prozess erneut starten.		
7	7	Ablegen der bearbeiteten Würfel in Transportkiste zur Weiterbearbeitung an DMU60. 100 Stück		
8	V-Nr40_ Spannen-Werk-stueck.JPG	Transport der Fertigteile (1.Aufspannung) zur DMU60		

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9	V-Nr40_ Pro-duktion. MP4 V-Nr40_ Trocken-lauf.MP4	In der Werkstatt an Maschine DMU60: Der Ablauf 2.Spannung auf der Maschine DMU60 erfolgt von der Arbeitsfolge sinngemäß gleich der Handlungen Nr.1 bis Nr.6 an der DMU50. Nach dem Durchlaufen aller Teile an dieser Maschine ist die mechanische, maschinelle Bearbeitung fertig.		
10	V-Nr40_ Messen1. JPG V-Nr40_ Messen2. JPG	In der Werkstatt im Messraum, Endkontrolle: Fertigteile werden auf Maßhaltigkeit und Oberflächengüte nach Zeichnung, in Stichpunkten geprüft.	1. Warum wird in der Endkontrolle nur in Stich-punkten (10 Stück) geprüft?	1. CNC-Technik ist durch festgelegte und gleiche, sich wiederholende Werkzeugbewegungen über einen langen Zeitraum auch gleichbleibend genau. Verschleiß am Werkzeug tritt bei Stückzahlen von 100 bei diesem Material selten auf.
11	11	Eloxieren im Auftrag bei Fremdfirma	1. Aus welchem Grund wird eloxiert?	1. das Eloxieren ist ein elektrochemisches Veredelungsverfahren, bei dem es zu einer Verfestigung der Oberfläche kommt. Die Gefahr der Beschädigung von Oberflächen bei Gebrauch wird damit herabgesetzt.
12	12	Farbbeschichten im Auftrag an Fremdfirma	1. Was wird mit Farbe beschichtet und warum?	1. Beschichtet werden die Punkte des Würfels, auf Grund der besseren Erkennbarkeit der Punkte

SBH Südost GmbH	Bezeichnung		Stck.	Fertigungsauftrag		Zeichnungsnummer	
	Würfel 30		**100**	**0018D2023-001**		**8-109.313-501**	
	Nr.	Werkstoffangabe		Rohmaße	Gewicht	Anfangstermin	Endtermin
Arbeitsplan	001	EN AW-2007 (AlCuMgPb)		Vierkant 32x32x36	0,1		

Vorg. Nr.	Vorgangsbezeichnung			Tr Vorg.	Te Vorg.	Programm-nummer /
			ausgeführt :Datum/Name/Stck.:	Tr Erh.	tg Erh.	Spannmittel
	Kosten-stelle	Arbeitspl. Betriebsm.		Z.f.P	Z.f.E	Arbeits-unterweisung
10	Wareneingangskontrolle					
	3010	0041				
20	Sägen auf Maß 36 (101 Stück; 1 Vorlaufteil)			2	1	
	Bandsäge					
	3620	0011				
30	1.Spannung 5-Seiten-Bearbeitung Fräsen/Bohren (Spannskizze 1)			20	2,8	109.H
	DMU50e.V.					Spannskizze 1
	3620	0023				Spannskizze 1
40	2.Spannung Rückseite Fräsen/Bohren (Spannskizze 2)			10	1,6	110.PM
	DMU60					Spannskizze 2
	3621	0024				Spannskizze 2
50	Endkontrolle					
	3210	0043				
60	farblos Eloxieren 12µm (101 Stück)					
	3210	0043				
70	Farbbeschichten der Punkte schwarz					

	Name	Datum		
erstellt	Kempf	17.09.2018		

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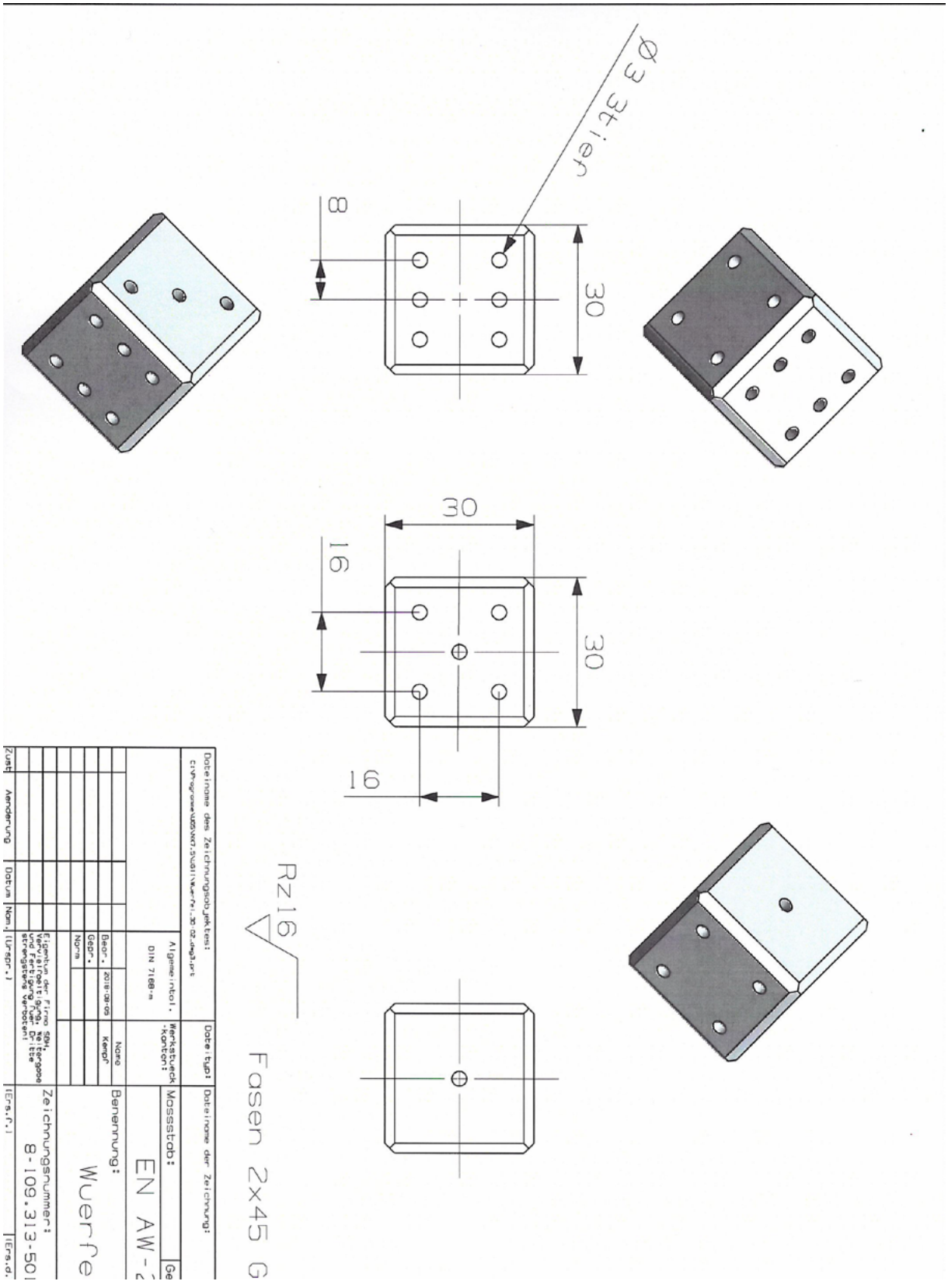
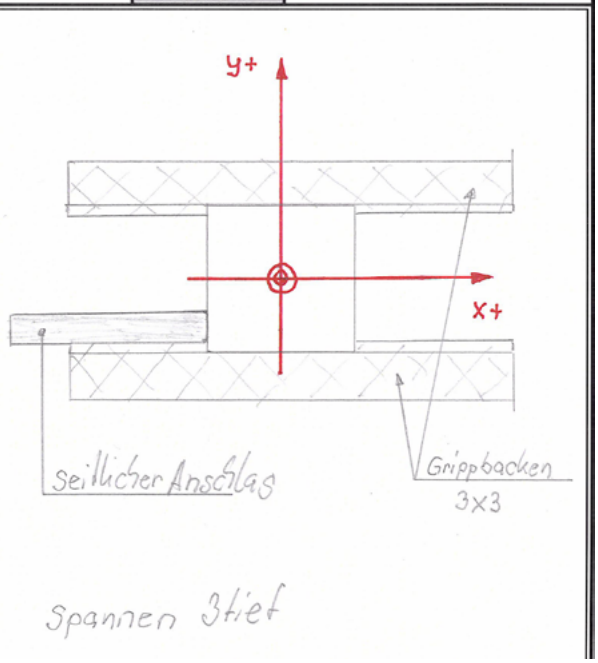


Link auf Zeichnung Wuerfel_30_Zeichnung_de

SBH SÜDOST	Werkzeugplan Fräsen Spannskizze	Bezeichnung	Würfel	Maschine / ID	DMU50	Werkstoff
		Zeichnungsnr.	8-109.313-501	Aufspannung	1 von 2	AlCuMgPb
		Programmnr.	109	Spannvorrichtung	5-Achs-Spanner	

Lfd.-Nr.	ID-Nummer	Werkzeug Bemerkung	Wx	Wz	Fräs. "R"
1	T30	PFK Ø30			
2	T18	Schaftfräser 20 SR VHM			
3	T20	Schaftfräser 20 SL VHM			
4	T22	Fasenfräser Ø12x45° VHM			
5	T24	Zenrtierbohrer A3 HSS lang			

Bemerkung:

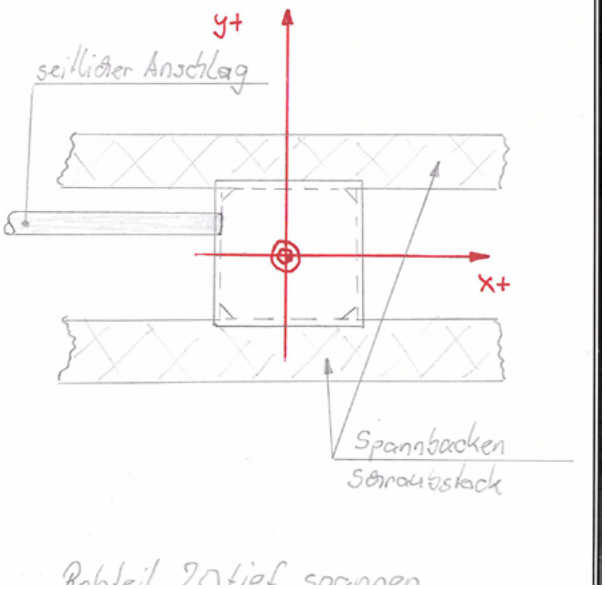


Link auf Einrichtungsblatt Vorgang 30

SBH SÜDOST	Werkzeugplan Fräsen Spannskizze	Bezeichnung	Würfel	Maschine / ID	DMU60/DMC635	Werkstoff
		Zeichnungsnr.	8-109.313-501	Aufspannung	2 von 2	AlCuMgPb
		Programmnr.	110	Spannvorrichtung	Maschinenschraubstock	

Lfd.-Nr.	ID-Nummer	Werkzeug Bemerkung	Wx	Wz	Fräs. "R"
1	T30	PFK Ø63			
2	T18				
3	T20				
4	T22	Fasenfräser Ø12x45° VHM			
5	T24	Zenrtierbohrer A3 HSS lang			

Bemerkung:



Link auf Einrichtungsblatt Vorgang 40

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Kalkulationsblatt

Anfragenr.:
Benennung : Würfel 30 Pos.
Zeichn.-Nr.:
Stckz.: 100
Rohmaterial: 32x32x3000 **Mat.-Güte :** EN AW-2007 AlCuMgPb

Maschine	Std. Satz	Arbeitsgangbenennung	tR	tA	F.-Kosten
Bandsäge	0,60 €	sägen auf Maß 36	2	1	0,61 €
DMU 50	0,90 €	5-Seiten-Bearbeitung (1.Spannung)	50		
		Planfläche		0,3	
		Außenflächen Schruppen		0,4	
		Außenflächen Schlichten		0,5	
		Fasen an Oberseite		0,5	
		Bohren der Punkte		0,6	
		Spannen		0,5	
				2,8	2,97 €
DMU 60	0,90 €	rückseitige Bearbeitung (2.Spannung)	30		
		Planfläche Schruppen und Schlichten		0,3	
		Fasen an Oberseite		0,5	
		Bohren Punkt		0,3	
				0	
				0	
		Spannen		0,5	
				1,6	1,71 €
					5,29 €

Materialkosten	0,58 €		
Eloxieren	0,79 €		
Spitzenlos schleifen			
Fertigungskosten	5,29 €		
Zielpreis	**7,08 €**	unterer Preis	**6,10 €**

Integration of the simulated company in the ILIAS learning management system

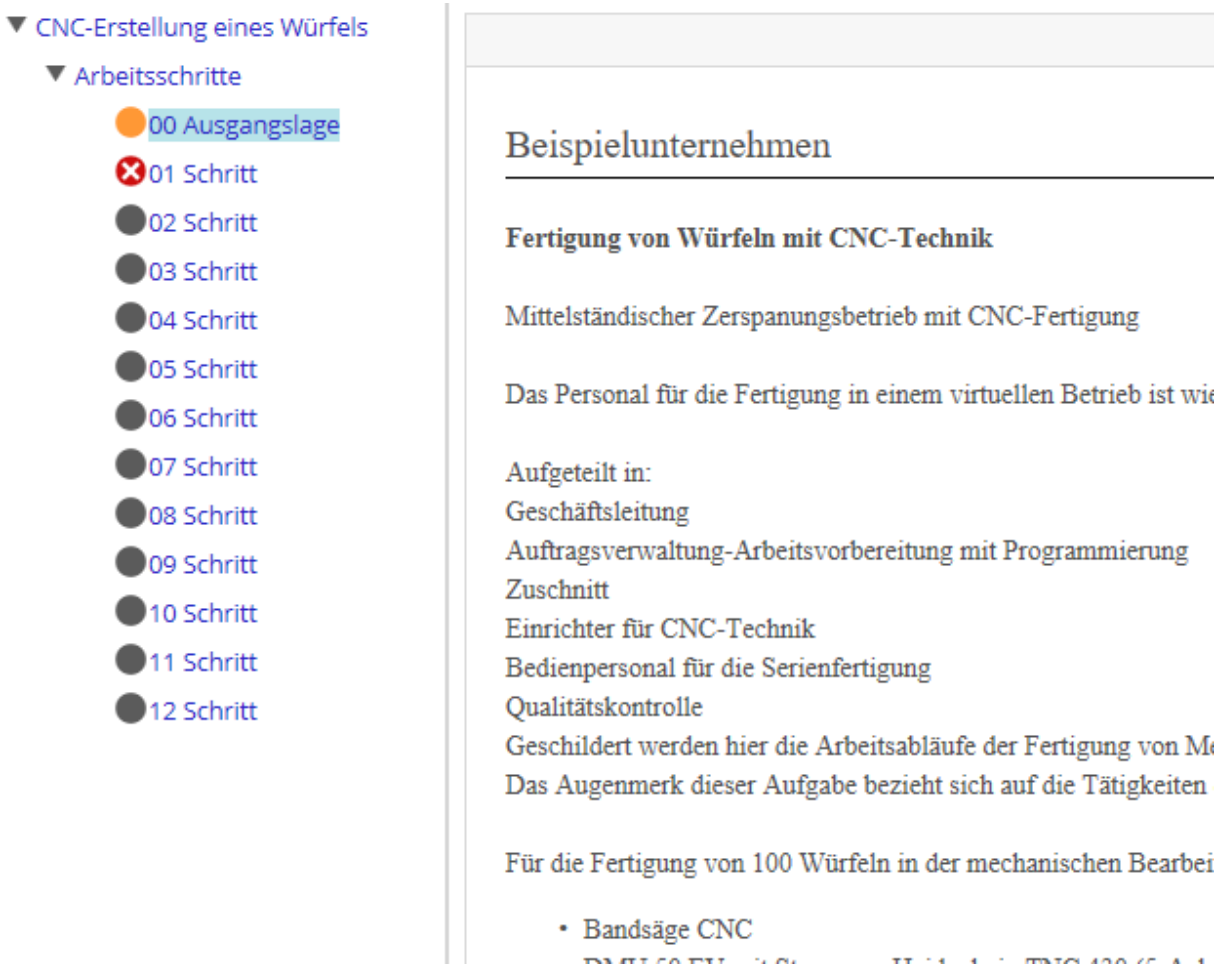
Getting into the study unit “CNC-based production of a cube” (100 pieces)

Link: **https://lms.sbh-gruppe.de**

Klicken Sie bitte den “Öffentlichen Bereich“ an.

far about **iv4J.eu**

https://lms.sbh-gruppe.de/CNC-Würfel
and „CNC creation of a cube“


CNC-Erstellung eines Würfels
Arbeitsschritte
00 Ausgangslage
01 Schritt
02 Schritt
03 Schritt
04 Schritt
05 Schritt
06 Schritt
07 Schritt
08 Schritt
09 Schritt
10 Schritt
11 Schritt
12 Schritt
Beispielunternehmen
Fertigung von Würfeln mit CNC-Technik
Mittelständischer Zerspanungsbetrieb mit CNC-Fertigung
Das Personal für die Fertigung in einem virtuellen Betrieb ist wie
Aufgeteilt in:
Geschäftsleitung
Auftragsverwaltung-Arbeitsvorbereitung mit Programmierung
Zuschnitt
Einrichter für CNC-Technik
Bedienpersonal für die Serienfertigung
Qualitätskontrolle
Geschildert werden hier die Arbeitsabläufe der Fertigung von M
Das Augenmerk dieser Aufgabe bezieht sich auf die Tätigkeiten
Für die Fertigung von 100 Würfeln in der mechanischen Bearbei
Bandsäge CNC

- CNC-Erstellung eines Würfels
  - Arbeitsschritte
    - 00 Ausgangslage
    - 01 Schritt
    - 02 Schritt
    - 03 Schritt
    - 04 Schritt
    - 05 Schritt
    - 06 Schritt
    - 07 Schritt
    - 08 Schritt
    - 09 Schritt
    - 10 Schritt
    - 11 Schritt
    - 12 Schritt

Vorbereitungen

Ausganssituation:
Die Maschine DMU50, die Werkzeuge und der Nullpunkt
Das Programm ist durch den Einrichter eingefahren.

Aufgabenstellung für den **Bediener**:

- Arbeitsauftrag lesen,
- Zeichnung lesen,
- Arbeitsfolgen und Werkstattdurchlauf verstehen.

Die Einweisung in die Bedienfolge der Maschine erfolgt du

SBH Südost GmbH	Bezeichnung		Stck.	Fertigu
	Würfel 30		**100**	**0018D**
	Nr.	Werkstoffangabe		Rohmaß
Arbeitsplan	001	EN AW-2007 (AlCuMgPb)		Vierka 32x32x
Vorg. Nr.	Vorgangsbezeichnung			
		ausgeführt:Datum/Name/Stck.:		
	Kosten-stelle	Arbeitspl. Betriebsm		
10	Wareneingangskontrolle			
	3010	0041		
20	Sägen auf Maß 36 (101 Stück; 1 Vorlaufteil)			
	Bandsäge			

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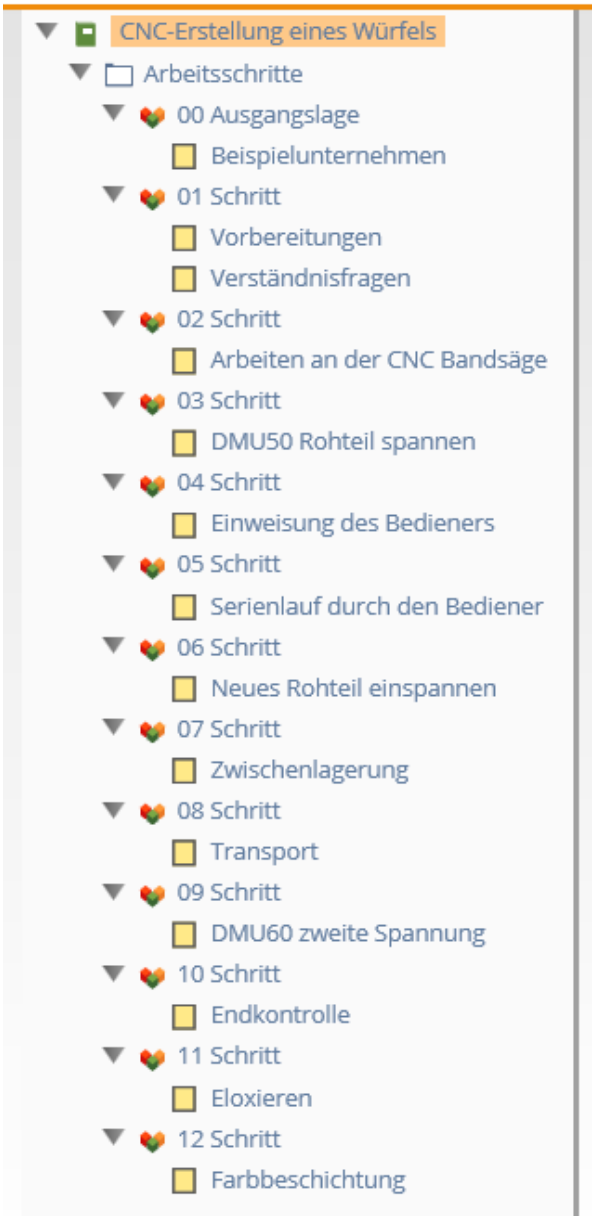
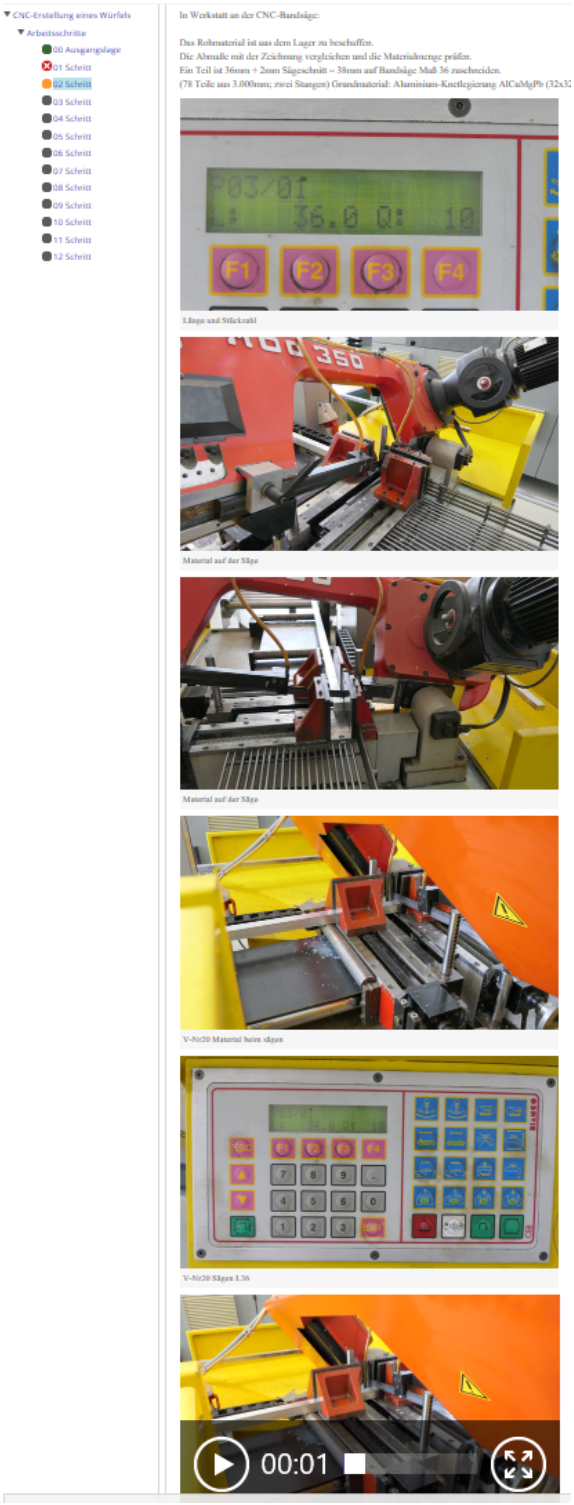
At the use the tutorial program CNC





Cut of material process 20

Summary (Conclusion)
In order not to describe the entire operation of the practice company, we have mainly focused on the activity of the operator. In collaboration with other professionals, operators are introduced to work-related activities. In this complex example, the apprentices learn machine-technical skills and abilities from the offer to the final inspection of the produced workpieces. A special effect is that the task can only be solved in teamwork. Thus, the work of the apprentices is very realistic and practical.

3.3 Organizing and planning of "work-based learning" on the example of the training as a warehouse specialist

A warehouse specialist is a competent, independent, innovative employee. Acquiring competencies in decision-making and responsibility is the goal of education. At the end of their apprenticeship, the trainee must have the skills required to be able to act appropriately and independently in professional, social and private situations. The operational work processes (activities) become more and more complex.

The **training content of the practical training** as a warehouse specialist has been adapted to the current requirements in the logistics industry. They are based on the most diverse tasks of a storage specialist, for example, logistics providers in large specialist stores, department stores or department stores in various sectors of the economy or in large stores of online retailers.

The **framework curriculum for vocational education** has also been revised in line with the needs of in-company training. The framework curriculum is structured according to learning fields and no longer according to the traditional school subjects. In this way, instruction in the vocational school should be oriented more towards holistic tasks and approach the practice in logistics (practice-oriented teaching).

A meaningful coordination between practice in the enterprise and theoretical knowledge transfer in the vocational school enables effective and work-related learning. In the 1st year of training, for example, these are the fields of learning at the vocational school

- LF 1: accept and control goods
- LF 2: store goods
- LF 3: processing goods
- LF 4: Transport goods during operation

These training fields of the vocational school correspond to the **training contents** (§ 17 training occupation picture) of the enterprise:

- § 7 No. 8 Acceptance of goods
- § 7 No. 9 Storage of goods
- § 7 No. 6 Goods control and quality assurance measures
- § 7 No. 7 Use of work equipment

The work-related education or the work-related learning becomes clear if it is possible to implement the training framework plan in such a way that the practical work is meaningfully combined with the theory of business with the daily work in the company. This is also possible with close coordination between training company and vocational school. You will find an example in the section "Accepting and Controlling Goods" of the training framework for warehouse operators.

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Ausbildungsrahmenplan Handlungsfeld	Fachpraxis	Fachtheorie
Güter annehmen und kontrollieren • Warenbegleitpapiere • Zuständigkeit beim Entladen des Transportfahrzeuges • Beachtung von Sicherheitskennzeichen • Schadensbeurteilung • Reklamationsfristen • Mängelarten • Separierung • Aufbewahrungspflicht • Tausch von Mehrwegverpackungen • Barcodierungen	• Belegprüfungen • Qualitatives und quantitatives kontrollieren der Packstücke • Waren-Empfang. ordnungsgemäß dokumentieren • Erfassen von Schäden an der Ware • Reklamationen dokumentieren • Verpackungen im art- und umweltgerechten Umgang • eigene Ideen zur Verbesserung der Arbeitsabläufe im Wareneingang.	• Überblick über die Lager- und Transportbereiche • Arbeitsmittel zur Be-/Entladung, Lagerung • unterscheiden zwischen Transport- und Sachschäden • handelsrechtlichen und vertragliche Regelungen • Lagerplatzoptimierung • Sicherheitsvorschriften • geeignete Belege, Prüfmittel sowie Hilfsmittel • Maßnahmen zur Mängelbeseitigung

The foundations of the dual education in vocational training in Germany are applicably analogously, even without a vocational school in adult education. It is important to support the experience, knowledge, skills and abilities gained in the daily work with theoretical knowledge transfer. Vice versa, theoretical knowledge is strengthened again and again with the practical activity in the working process.

3.4 Work-based learning in form of a simulated company in business education

Why to use a simulated company?

In an training company, the commercial department of a company with all essential parts is depicted realistically.

Practice companies can meaningfully support the commercial training, e.g.:

- as a practical part of a theoretical education in vocational schools,
- in further education in the commercial area and in vocational rehabilitation,
- in companies that want to communicate specific training content in their company-based training and in the overall context.

Participants can directly learn and exercise operational business operations with this teaching and studying concept under consideration of business rules and legal framework conditions.

The special strength of practice companies are their external contacts. Just like companies in the real market economy, exercise companies also interact with each other in interactive business relationships. In addition to subject-specific competences, participants gain valuable key qualifications through work in a team and the independent solution of real problems, which they can take along in their later professional life.

The individual design of a practice company is virtually unlimited. From the business idea to the selection of the legal form and the mapping of operational hierarchies to the determination of number and content of commercial processes to be depicted: You can tailor “your” training company exactly to the existing training requirements and, if necessary, subsequently expand and adapt.

Contents and methods of the business exercise company

The organization of the practice company is characterized by the division into departments. In the practice company, participants learn the practice of buying and selling, warehousing, accounting and human resources, secretarial, marketing and sales - and thus all facets of the commercial work and with all the tasks that go with it.

The participants work with standard commercially available software such as SAP, DATEV, SAGE, LEXWARE or NAVISION.

Of course, the traded services and goods are also paid, i.e. goods and money cycles are - although only fictitious - fully represented from a commercial point of view. In addition to its own practice company bank provides the central office of the exercise companies other higher-level services, such as tax office, customs office or health insurance. An extensive and powerful software to support the business operations of all practice companies **combined in the German ÜbungsFirmenRing** is also included. This allows participants to acquire the required knowledge in dealing with authorities, offices and similar institutions relevant for merchants.

Particularly in the case of open (adaptation) qualifications, duration as well as content can be adapted to the previous knowledge as well as the intended educational goal of the participants. This allows individual training concepts.

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The patron company

The subject contents and processes conveyed in an exercise company are often also modelled on the concrete processes in a real enterprise, which is available as a patron (sponsoring) company.

Such a sponsorship has many advantages for a practice company:

- Helps with the practice relevant education
  - Support at the design of forms
  - Availability of piece of evidence and trial product samples
  - Orientation figures for stock levels and cost estimates.
- Subject advice by colleagues of the patron company
- possibility of a company visit or a traineeship
- Fair sponsoring

The sponsoring company can also benefit from the cooperation:

- Free advertising to the practice participants for their own products and services
- Gaining new employees after leaving the practice company
- Image gain through commitment to education

How does national and international trade work in a practice company market?

Concrete business activities of the practice company are the basis of practical learning within this training concept. But who are the market partners in this fictive market economy?

There are basically two customer groups in the practice company world, with which appropriate trade can be operated:

Other practice companies as business customers

The business activity of an exercise company arises primarily through the lively trade with other exercise companies, which expect a response to inquiries, orders or invoices within a reasonable time. Business customers buy goods as raw materials or for resale as part of their own business or equipment. They use services, for example to carry out a company trip or to design their own website. Different prices, qualities, delivery capabilities and other services offer participants the chance to compare offers and to choose the cheapest or best provider.

Corresponding companies are available for initiating initial business activities with newly established training companies and for ensuring ongoing business operations. These buy or sell goods or services for which there would otherwise be no market partners.

Participants of the practice company as consumers

The participants to be trained are treated like employees in the practice company. They receive wages and salaries for their services, which are based on real collective agreements. These incomes flow back into the business cycle of the practice company market as demand for consumer goods and thus ensure a corresponding sales volume as well as subsequently for business transactions of the practice firms operating in these sectors.

The field of action of an exercise company is not limited by national boundaries. Also international business activities with practice companies in numerous other countries are possible and usual.

The international exercise companies fair

Once a year, a professionally oriented training company fair takes place at changing locations in Germany, in which numerous exercise companies from Germany and abroad participate. The fairs are an excellent platform for teaching important practical learning objectives, especially in the area of marketing and sales.

In the run-up to the event, participants prepare for the trade fair: they plan trade fair stands, create information and advertising materials and create staff deployment plans.

During the fair, the participants present the offer of the practice company, conduct negotiations, sales and sales pitches and promote their company.

Subsequent orders must be processed, new business contacts can be expanded in the further work. In addition, the fair provides trainers and teachers with an ideal platform for professional exchange. Seminars with topical and relevant topics for the practice company world complete the fair offer.

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Organization of the exercise company market

Europen/PEN International

The central offices in Germany and other countries as well as the affiliated practice companies together form the worldwide practice company market PEN International (Practice Enterprises Network).

Exchanging more than 7,000 practice companies in more than 40 countries provides outstanding opportunities for acquiring international trade skills, from communicating in foreign languages to gaining experience in international trade customs to customs, tax, or logistics.

Image Film

EUROPEN PEN International EN Links **EUROPEN PEN International DE**

Who are the holders of exercise companies?

Practice companies can support the commercial training appropriately, for example:

- as a practical part of a theoretical education in the vocational schools
- in further education in the commercial sector (FbW)
- in vocational rehabilitation
- in companies that want to teach special training contents in their in-company training outside their own company

The use of an exercise company offers the opportunity to introduce modern team-oriented work organization action-oriented in training. Teachers are doing a role change from “instructor” to “manager of a company”.

Joint learning is also changing. As learning consultants and organizers of learning processes, they provide participants with advice and support in order to jointly and cooperatively solve the manifold problems arising from simulated trade. They master the principle of action-oriented learning and are therefore able to promote key qualifications. The recognition and elimination of communication problems is also one of her tasks.

Procedure of SBH Südost GmbH according to

KBM – official training framework (education business)

Regulation on vocational training
businessmen for office management and clerks for office management
(Office Management Trader Training Ordinance - BüroMKfAusbV)

Excerpts: …

§ 4 Struktur der Berufsausbildung, Ausbildungsberufsbild

(1) Die Berufsausbildung gliedert sich in:

1. gemeinsame berufsprofilgebende Fertigkeiten, Kenntnisse und Fähigkeiten in den Pflichtqualifikationen,
2. weitere berufsprofilgebende Fertigkeiten, Kenntnisse und Fähigkeiten in zwei Wahlqualifikationen, die jeweils fünf Monate dauern und im Ausbildungsvertrag festgelegt werden,
3. sowie gemeinsame integrative Fertigkeiten, Kenntnisse und Fähigkeiten.

§ 5 Durchführung der Berufsausbildung

(1) Die in dieser Verordnung genannten Fertigkeiten, Kenntnisse und Fähigkeiten sollen so vermittelt werden, dass die Auszubildenden zur Ausübung einer qualifizierten beruflichen Tätigkeit im Sinne des § 1 Absatz 3 des Berufsbildungsgesetzes befähigt werden, die insbesondere selbständiges Planen, Durchführen und Kontrollieren einschließt. Diese Befähigung ist auch in den Prüfungen nach den §§ 6 und 7 nachzuweisen.

Ausbildungsrahmenplan für die Berufsausbildung zum Kaufmann für Büromanagement und zur Kauffrau für Büromanagement
– sachliche Gliederung –

…..

Abschnitt C: **Gemeinsame integrative Fertigkeiten, Kenntnisse und Fähigkeiten**

1 Ausbildungsbetrieb (§ 4 Absatz 4 Nummer 1)

…..

1.7 **wirtschaftliches und nachhaltiges Denken und Handeln** (§ 4 Absatz 4 Nummer 1.7)

a) Rolle der Mitarbeiter und Mitarbeiterinnen für den betrieblichen Erfolg erkennen
b) betriebswirtschaftliche Zusammenhänge und Aspekte der Nachhaltigkeit bei der Aufgabenerledigung berücksichtigen
c) Verfahren der Wirtschaftlichkeitsrechnung anwenden

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d) Kosten-Nutzen-Relationen bei der Aufgabenerledigung beurteilen und Aufgaben effektiv erledigen

2 Arbeitsorganisation (§ 4 Absatz 4 Nummer 2)

.....

2.1 **Arbeits- und Selbstorganisation, Organisationsmittel** (§ 4 Absatz 4 Nummer 2.1)

a) eigene Arbeit systematisch planen, durchführen, kontrollieren und reflektieren; dabei inhaltliche, organisatorische, zeitliche und finanzielle Aspekte berücksichtigen
b) Arbeits- und Organisationsmittel einsetzen
c) Methoden des selbständigen Lernens anwenden, Fachinformationen nutzen, Lern- und Arbeitstechniken anwenden
d) Informationsflüsse und Entscheidungsprozesse berücksichtigen

.....

2.4 **qualitätsorientiertes Handeln in Prozessen** (§ 4 Absatz 4 Nummer 2.4)

a) betriebliche Abläufe unter Berücksichtigung von Informationsflüssen, Entscheidungswegen und Schnittstellen einordnen und mitgestalten
b) eigenes Handeln im Arbeitsprozess in Bezug auf den Erfolg des Geschäftsprozesses und auf die Belange aller Beteiligten reflektieren und anpassen
c) zur kontinuierlichen Verbesserung von Arbeitsprozessen im Betrieb beitragen

3 Information, Kommunikation, Kooperation (§ 4 Absatz 4 Nummer 3)

.....

3.1 **Informationsbeschaffung und Umgang mit Informationen** (§ 4 Absatz 4 Nummer 3.1)

a) Informationen recherchieren, beurteilen, aufbereiten und archivieren
b) Informationen auswerten, interpretieren und in sprachlich angemessener Form weitergeben
c) Vor- und Nachteile verschiedener Informationsquellen berücksichtigen

und

KBM – Rahmenplanlehrplan (Berufsschule)

RAHMENLEHRPLAN
für den Ausbildungsberuf
Kaufmann für Büromanagement und Kauffrau für Büromanagement
(Beschluss der Kultusministerkonferenz vom 27.09.2013)

Auszug: …

Teil II Bildungsauftrag der Berufsschule

Tel IV Berufsbezogene Vorbemerkungen

Die Lernfelder orientieren sich an betrieblichen Handlungsfeldern. Sie sind methodisch-didaktisch so umzusetzen, dass sie zur beruflichen Handlungskompetenz führen. Die Kompetenzen beschreiben den Qualifikationsstand am Ende des Lernprozesses und stellen den Mindestumfang dar.

Die Lernfelder bauen spiralcurricular aufeinander auf.

Praxis- und berufsbezogene Lernsituationen nehmen eine zentrale Stellung in der Unterrichtsgestaltung ein. Die Lernenden erwerben durch die eigenverantwortliche Bearbeitung dieser Lernsituationen nicht nur Fachkompetenz, sondern wenden mit Hilfe der erreichten Sozial-, Kommunikations-, Handlungs- oder Selbstkompetenz Lern- und Arbeitsstrategien gezielt an. Sie führen zur Lösung der Lernsituationen eine vollständige Handlung durch und erstellen ein Handlungsprodukt.

Selbstständigkeit, vernetztes Denken, Problemlösen und die Entwicklung von Einstellungen und Motivationen sowie Teamfähigkeit sind Unterrichtsprinzipien. Ein wichtiges Ziel ist es, die Lernenden zu unterstützen, ihr Selbstvertrauen zu stärken, ihre Kreativität zu entfalten und ihre Persönlichkeit weiter zu entwickeln. Die Lernenden werden befähigt, innovativ und umweltbewusst zu handeln, gesundheitsbewusst und gewaltfrei zu agieren und Selbstverantwortung für ihr Leben und Lernen zu übernehmen.

Teil V Lernfelder

1. Die eigene Rolle im Betrieb mitgestalten und den Betrieb präsentieren
2. Büroprozesse gestalten und Arbeitsvorgänge organisieren

…

11. Geschäftsprozesse darstellen und optimieren

12. Veranstaltungen und Geschäftsreisen organisieren
13. Ein Projekt planen und durchführen

Umsetzung in der **SBH-Südost GmbH** am Beispiel - **Lernfeld 11**

Geschäftsprozesse darstellen und optimieren

1. Funktionsorientierte und geschäftsprozessorientierte Organisation unterscheiden
2. Den organisatorischen Aufbau eines Unternehmens darstellen

2.1 Stellen- und Abteilungsbildung erläutern

2.2 Leitungssysteme darstellen

3. Geschäftsprozesse des Unternehmens unterscheiden
4. Darstellungsformen betrieblicher Abläufe vergleichen
5. Methoden der Ist-Aufnahme nutzen
6. Gestaltungsmöglichkeiten zur Verbesserung von Arbeitsabläufen

ILIAS Erläuterung siehe Handbuch IO2 web2.0 Tools

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Chapter 4.

WORK-BASED LEARNING FOR SPECIAL TARGET GROUPS

4.1 Work-based learning at early professional orientation of students

The transition from school to education is an important step for the future professional activity. Has the right education been chosen? Does this education correspond to the interests and inclinations as well as the abilities and skills of the student? Was the student sufficiently and correctly informed about the chosen training? We want to prevent as many apprenticeship crashes as possible by means of practical and job-related early vocational preparation / vocational orientation.

An example of our early career orientation:

Lebenswelt: Mensch und Information/Wissen
Tätigkeitsfeld: einkaufen / verkaufen, kassieren und sortieren, packen, beladen
Arbeitsergebnis: Einkaufen, Einlagern und Versand von Ware

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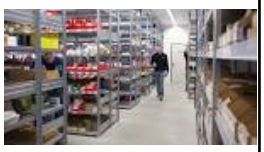
Informationen zum Tätigkeitsfeld

Möglichkeiten – Bereiche – Berufe im TF – Ausbildung – Chancen

Komplexitätsstufe 1

Ziel	Inhalt	Methoden	Medien
Erkunden von Arbeitsmaterialien und Arbeitsmitteln und deren Einsatz im Tätigkeitsfeld	Den Schülern/innen werden die Bereiche zum Einkaufen/Lager/ Warensortimente/Auftragsbearbeitung etc. und deren Aufbau (z.B. Einkaufsbereich, Lager, Kasse etc. in diesem Tätigkeitsfeld vorgestellt. Es folgen Infos zu „Warensortimenten“, Lagerbereiche, Präsentation von Waren und Verkauf sowie Tätigkeiten im Umgang mit Kunden. Dies wird flankiert durch kleine Übungen zum Umgang mit den Arbeitsmaterialien und –mitteln. Erstellen von Warenkörben im Sortiment, Schaufenstergestaltung,  	Gruppenunter-weisung Partner-übungen	Nutzung des vorhandenen Lagers und des Einkaufs-bereiches,
Vertiefendes Erkunden von Arbeitsmaterialien und Arbeitsmitteln und deren Einsatz im Tätigkeitsfeld (angepasst an Interessen/ Motivation)	Den Schülern/innen werden Ablaufprozesse dargestellt und praktisch umgesetzt. Beginnend vom Bestellprozess von Kunden, über die Beratung zu einer Ware, der Präsentation der Ware, der attraktiven Verpackung der Ware und des direkten Verkaufs der Ware. Es folgen kleine Übungen zum Umgang mit den Arbeitsmaterialien und –mitteln.	Gruppeninfo Partner-übungen	Nutzung des Lagers und des Einkaufs-bereiches, Bereitstellung von Waren-sortimenten, Listen und Arbeitsgeräten

Komplexitätsstufe 2

Ziel	Inhalt	Methoden	Medien
Recherche, Einkaufen, Lagern und Verkaufen von Waren incl. Versand	Nutzung der Grundlagen aus K 1 Vorstellung der Geräte des TF: Kasse mit Scanner, EDV, Spielgeld, Kassenbelege, Quittungen, Inventurboards und andere Belege.		Nutzung des Lagers und des Einkaufs-bereiches, Kasse mit Scanner, Spielgeld, Lieferscheine, Bestellung
	Die Schüler/innen werden in ca. 2 Gruppen aufgeteilt. Sie können mittels EDV-Recherche nach vorgegebenen Artikeln und Preisen recherchieren, dann im Einkaufsbereich ihren eigenen Warenkorb zusammenstellen und anschließend mit Spielgeld bezahlen. Der/die Partner/in beraten die „Kunden/innen“, scannt die Ware und gibt das Wechselgeld heraus. Es wird im Anschluss die Ware verpackt/ dekoriert.	Begleitetes aber Selbständiges Arbeiten in Kleingruppen bzw. mit Partnern/ innen	
	Danach erfolgt die Kontrolle des Warenbestandes im Bereich, ggf. ordern von Waren aus dem „Lager“ oder „Initiierung“ der Nachbestellung (z.B. telefonische Bestellung)	Individuelle Einzelarbeit	
	Die Schüler/innen bekommen eine „Lieferung“ von Waren mit Lieferschein und kontrollieren die Vollständigkeit sowie lagern die Waren ein.		
Lagern von Waren	Danach erhalten sie eine Bestellung und müssen die Ware aus dem Lagerbereich holen und ordnungsgemäß verpacken.	Begleitetes aber selbständiges Arbeiten in Kleingruppen bzw. mit Partnern/ innen	Waren, Handhub-wagen, Stretchfolie, Parcours
	Die Schüler/innen können ihre Lieferungen nach ordnungsgemäßer Beladung auf einem Handhubwagen durch einen Parcours befördern.		
	(ggf. können die Schüler/innen eine kleine Inventur (mit vorgegebener Zählliste und/ oder Scanner) durchführen.	Ggf. Nutzung Software Stapler	Ggf. Gabelstapler
	Ggf. erfolgt Vorstellung Arbeitsprozesse Beladen/Entladen mittels Gabelstapler		
Beladen und Befördern von Waren	 		

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Komplexitätsstufe 3

Ziel	Inhalt	Methoden	Medien
Kennenlernen weiterer Tätigkeitsfelder und der dabei eingesetzten Technik	Kurzzusammenfassung zu den Bereichen im TF. Die Schüler/innen bekommen über verschiedene Filmmaterialien Einblicke in die komplexen Arbeitsabläufe von großen Unternehmen in Bezug auf das Tätigkeitsfeld. Einbeziehung der Nutzung moderner Techniken im Tätigkeitsfeld an Hand der Prozesse bei einem „INTERNETVERSANDHANDEL“.  Moderne Verkaufseinrichtungen am Beispiel von „AMAZON“	Gruppen-unterweisung visuelle Impulse	Foto-/ Filmmaterial Beamer, Laptop oder TV Arbeitsblätter/ Flyer Video

4.2 Work-based learning in the training of rehabilitants

It is a special task for educational companies such as the SBH Südost GmbH, to provide training with additional support for disadvantaged people. The example of learning-impaired youth makes it particularly clear how important the world of work and life-related learning is. Many years of experience have shown that people with learning disabilities, in particular, gain experience through practical activities and thus also develop skills and abilities. Vocational training is only possible for this target group through work-based learning.

Adolescents with a learning disability usually learn and work significantly slower. Therefore we give them more time to handle individual tasks. If we consider their preferred type of learning, we allow them to gradually reduce the time spent developing problem solutions. The fragmentary, collage-like and less coherent thinking that is typical for this group of participants is methodically and didactically taken into account through a visual preparation of the subject matter (mind maps, learning posters, etc.) or support in the creation of visual learning aids. Visualizations can also affect the often limited organization of learning disabled people. Uncertainties in the planning and organization of required action steps may be reduced by creating checklists. Due to the low ability of abstraction, we often experience a rather action-oriented learning motivation in these adolescents (motor learning type). We meet these needs by practical testing, discovery learning and regular evaluation of the steps taken. The inclusion of the individual experiences of the participants from their previous environment is very helpful. Own practical experiences are thus gradually reinforced with theoretical knowledge.

In this way, we simultaneously strengthen the capacity for self-reflection as well as social and methodological competencies.

In the everyday life of apprentices, the situation often arises that trainees in vocational education have only dealt with a topic in a brief way and feel overwhelmed. Our many years of experience in working with disadvantaged and disabled adolescents and young adults has shown that it is absolutely necessary to work up the material in a didactically appropriate way for the target group. The choice of learning objectives (quantitative and qualitative) and learning time is based on the individual learning prerequisites. In order to open up learning opportunities for our apprentices, it is important to motivate them by connecting to their own experiences and to create action and team-oriented learning situations. From experience, action-oriented methods, practical examples and independent processing of learning contents have proven to be useful in teaching theoretical subject-specific knowledge. Learning outcomes for this target group are based mainly on practical experience and own life experiences.

A particularly motivating approach for our apprentices is to work with learning portals. We use the interest of the young people in digital media in order to introduce them to - in some cases also difficult - learning contents in this way. The learning portals offer countless opportunities to make learning individual, varied and effective.

The trainee can:

- choose one's learning material individually (subject matter, topic),
- determine the degree of difficulty himself,
- work the tasks at his own pace of learning,
- See his learning achievements clearly.

This media-based approach opens up new (learning) perspectives for young people. They learn to use digital media to independently acquire occupational, cross-occupational and general content. The different types of learning are also addressed in cooperative tasks. We have had particularly good experience with the use of the portal "very much" as well as with the online portal of the German Adult Education Association **www.ich-will-lernen.de**.

Working with digital media increases apprentices' motivation to engage with abstract learning content themselves. The active engagement with the difficult substance also promotes the performance of the shelf and optimizes the learning process. Fun to learn and visible learning successes are essential prerequisites for a positive course of training.

In particular, informal learning processes also play a role in the personal and professional development of young people. We help young people build their Personal **Learning Network (PLN)** In addition to SBH staff, this network includes caregivers from the private environment, other young people (peer-to-peer, learning tandems), but also digital resources such as helpful youtube channels, social media, apps and learning platforms. We develop with the adolescents possible learning content and pathways that meet their current learning needs. Both the creation and the nurturing of

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the Personal Learning Network provide opportunities for young people to become more and more important in professional life

- Collecting / processing information (exploring, discovering)
- Present content (Produce, Publish)
- Cooperation / exchange with others (dialogue, cooperation).

We also support this learning in networks through methodological arrangements such as **„learning through teaching“**. By taking on smaller “teaching assignments,” young people are moving into the role of “teachers.” In the preparatory phase, they engage in a thematic unit in dyadic teams, in order to then offer the contents to others. As a side effect, this also involves the exchange of personal experiences and knowledge of the practical activity and the environment.

In this way, the young people are given responsibility and their self-confidence strengthened. In addition to the effective acquisition of technical content, this method promotes also team and communication skills as well as the ability to acquire, view and process information.

Personal learning network

Chapter 5.

Implementation and implementation notes

With the examples shown, it becomes clear that, according to our many years of experience, the successful transfer of knowledge is closely linked to practical activity and the experiences from the personal world of work and life. The inclusion of the working and living environment of the participants facilitates and supports the learning process in the long run. This finding applies to all learning age groups from pupils to apprentices to adult education and the education and training of people and rehabilitators with learning disabilities. A successful WBL therefore requires viable networks in the region for all education providers.

Networks generally form the basis for successful cooperation between partners in the regional training and labour market. The development and maintenance of these networks is a prerequisite for the functioning of a good and successful cooperation.

The vocational preparations we have carried out so far have provided training and qualifications have made close cooperation with the relevant chambers (Chamber of Crafts, Chamber of Commerce and Industry, Office of Agriculture and Regional Reorder), cooperation companies, Vocational schools, agencies for work and other institutions.

We are committed to projects that are conducive to this cooperation and, within the framework of our quality management, we are striving to expand and expand such collaborations. The partnerships, which are important in this context, are constantly evaluated in order to be properly maintained, expanded and terminated.

Internal and external anchoring and networking with regional companies and companies, institutions and working groups is constantly being developed in order to successfully accompany young people on their individual integration path into the first labour market. With the participation of the above actors, the establishment of the regional cooperation network aims to exploit existing resources, develop and initiate new activities.

The closer our training and qualification is to the real world of work, the more successful the integration of participants into the labour market is.

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