

## S 24 Support material

### **Didactic - methodical draft for the vocational training and further education in the building industry**

#### **1. Vocational training of bricklayers and carpenters**

In the European context the training of bricklayers and carpenters is directed on the development of the act competence. It is about the willingness and ability of the individual to behave competent, thought-out as well as social responsible in social, business and private situations.

This objective requires arranging the training in such a way that the learner acquires professional-, social- and method competence by independent planning, carrying-out and good judge of projects.

A didactic-methodical draft is necessary for that. It is based on learning-theoretical and didactic cognition and starts out from following ideas:

The concept is a modular, project-oriented draft,

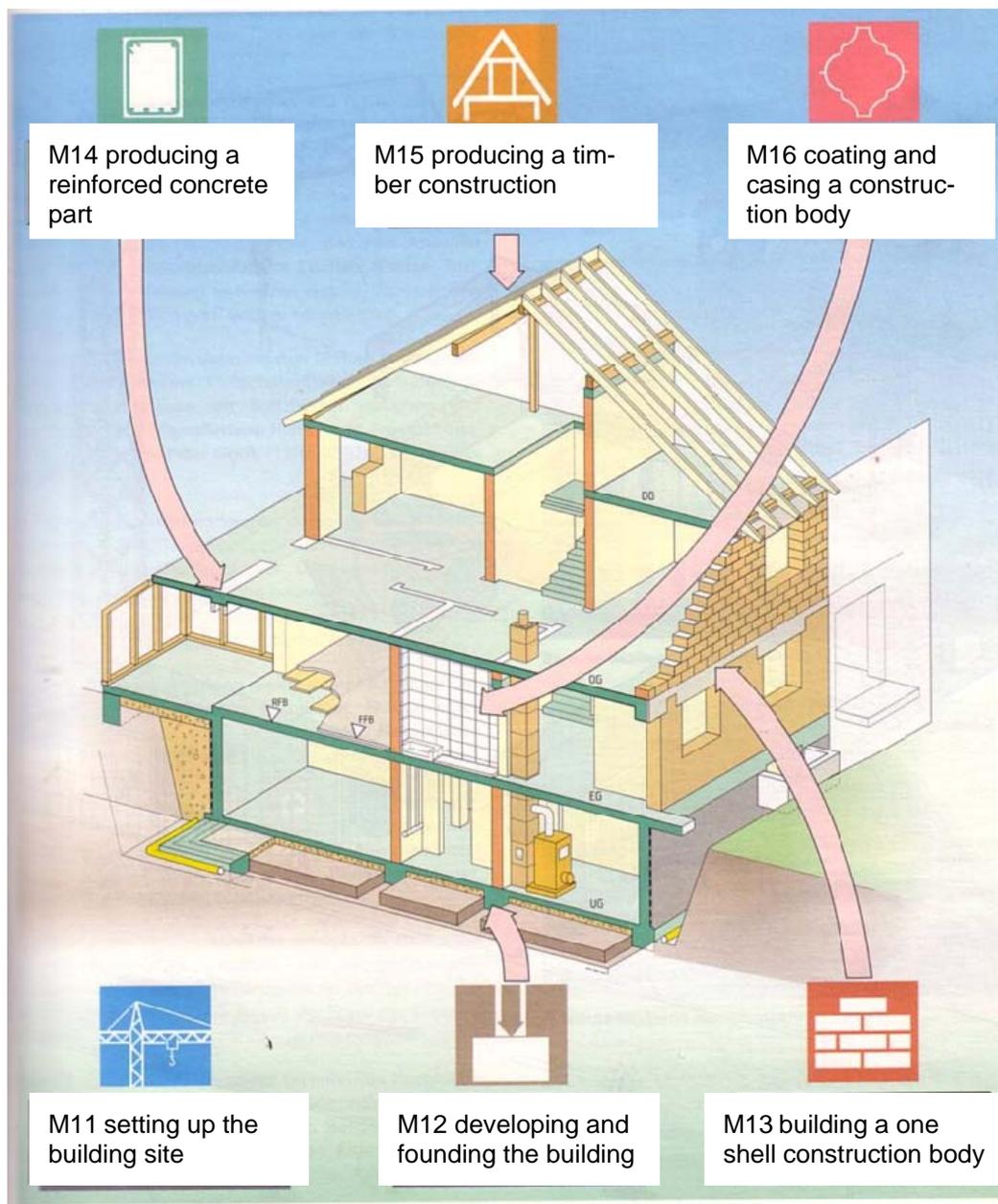
- by that the learners can acquire job-comprehensive as well as job-related competences more and more independently by means of open and complex operational tasks.  
It contains modern forms of teamwork. The strengthening of the self-responsibility of the individual is supported and the commitment is challenged. The project-oriented draft is an action draft that takes all levels of action into consideration:
  - the intellectual level with the aspects of thinking and thinking proceedings
  - the conceptual-perceptive level with the aspects of activity and carrying out
  - the sensual motor activity level with the aspects of the course of motion and automation
- by that interdisciplinary aspects are taken into consideration and the learners are enabled to integral thinking and acting. For it the treatment of projects, the technical, security technical, economic, legal, ecological and social aspects are included.
- by that the learners acquire expert- and process knowledge referred to projects that are necessary for their occupation and internal career. Methodical and social competences are developed simultaneously by means of conveying and acquiring knowledge.
- by that the learners are enabled to lifelong professional and operational learning. The draft contains suitable methods which make possible the wilful and well-directed self-organisation of learning processes and the making use of experiences of the learners.

- by that the obtained knowledge, abilities and skills are referred to building sites. They learner to develop narrow refers to their later occupation and to develop a broad making use of what they have learned.
- which is modular assembled. The single selection as well as the interchangeability of the modules and their different combination is possible.

### The modular, project oriented learning draft

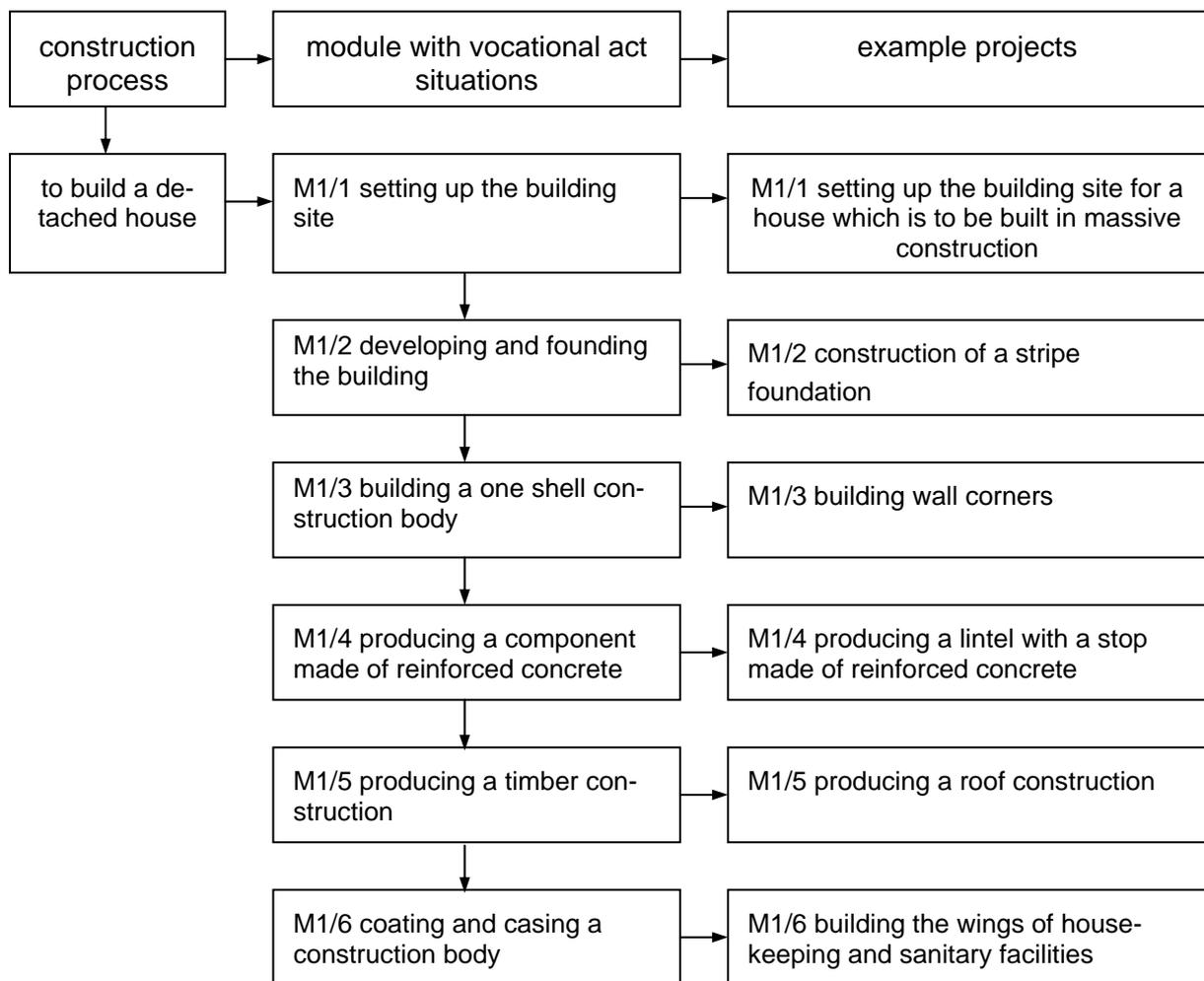
In the centre of the modular, project oriented learning draft stands the construction of a detached house as the didactic main theme.

**Picture 1: “We build a house”** – Example modules for the 1<sup>st</sup> training year bricklayer / carpenter



The learning draft is based on modules corresponding to the construction process. A module characterizes a professional field of action. A module contains a completed part of knowledge and skills to be acquired and determines learning objectives, learning matter, methods of learning, organization of learning and the kind of determining results as well as the guideline for the time. The module content is processed didactically by the teachers and instructors. This module content has to be worked on by the learner more and more individually. (picture 2).

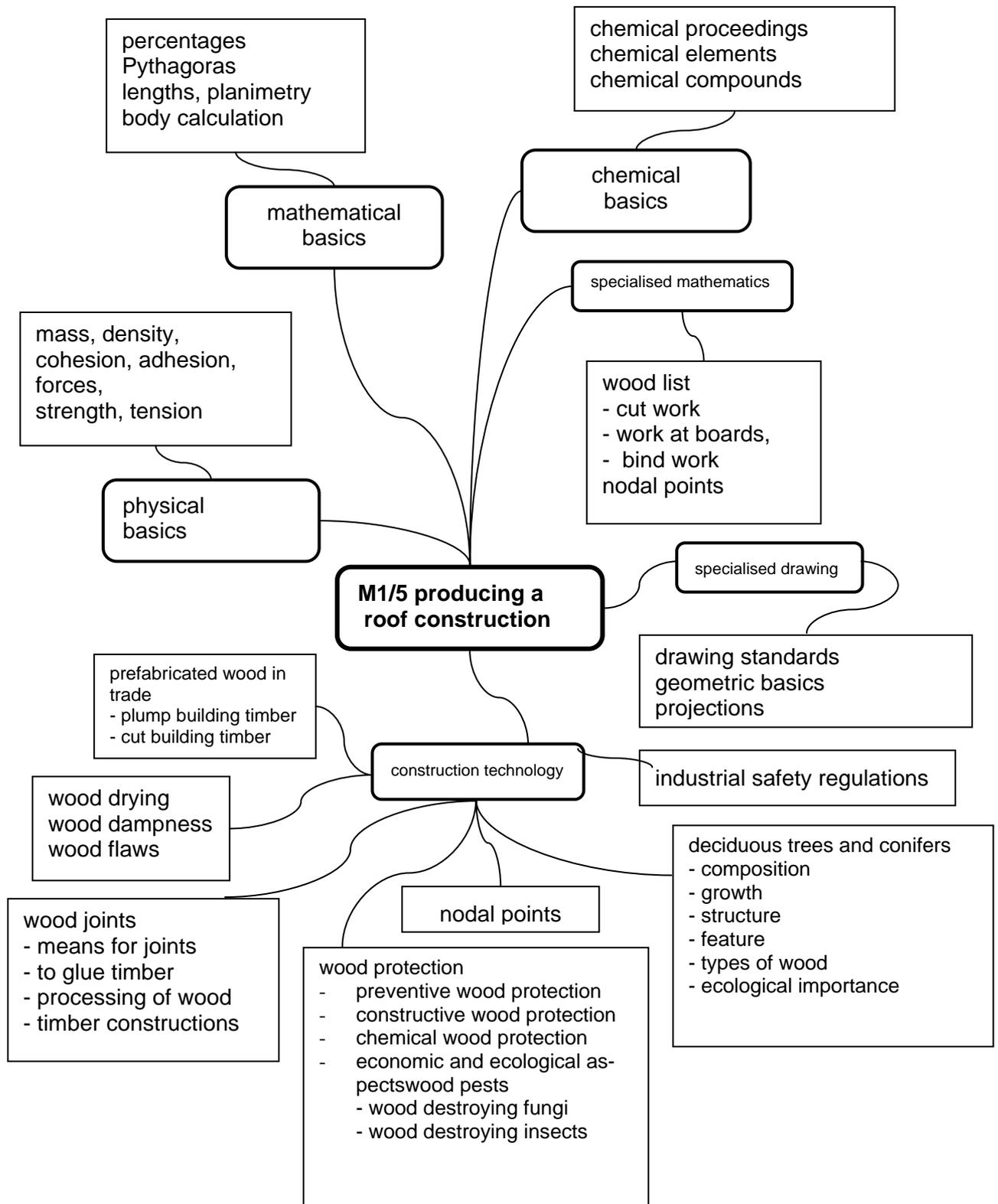
**Picture 2: Modules and Projects** – by the example of the 1<sup>st</sup> training year bricklayer



**Example projects for the training of carpenters in the 1<sup>st</sup> training year:**

- Z1/1 Producing a moulding-beam roof
- Z1/2 Producing exterior walls with historical-regional character
- Z1/3 Build a Carports
- Z1/4 Producing a pergola
- Z1/5 Producing a saddleback
- Z1/6 Constructing a bathroom (in inside building method and with tiles)
- Z1/7 Producing a reinforcement construction for a reinforced concrete stair
- Z1/8 Producing a lintel made of reinforced concrete
- Z1/9 Producing a roof with a beam passing parallel along the roof ridge to support the rafters with threefold standing roof truss

**Picture 3: Project M1/5 Producing a roof construction –including specialised and interdisciplinary knowledge**



The creation of a complex building project with its constructive, functional, technological-organizational and social-interactive relations is arranged realistically. It is distributed over the training years.

In this way separate products come into being. They are related to the modules and create freedom for separate and group learning processes. Time is also available for the sophisticated development of skills individually.

The successful conversion of the project oriented learning draft takes place according to the model of the complete act. The possible didactic way to handle it consists in following steps:

Acts of the teachers		Acts of the learners
forming working teams, ensuring organizational pre-conditions, providing necessary information by means of teaching- and learning sequences in the plenum	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     problem analysis, setting goals goal description                 </div> <div style="border: 1px solid black; padding: 5px; text-align: center;">                     to procure information to evaluate information                 </div>	to analyse problems, to determine solution methods, obtaining and looking through materials, to obtain, to discern, to collect, to put in order, to use, to evaluate information
advice	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     Planning the procedure Working out variations of solution                 </div> <div style="border: 1px solid black; padding: 5px; text-align: center;">                     to decide for one variation of solution                 </div>	to compare, to evaluate, to decide, to plan the working steps, to record the planning
advice, providing working means, individual or concerted evaluation of the interim results	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     to solve the task to carry out the work                 </div>	acting according to the plan, the use of working means and working methods
outside evaluation: individual or concerted evaluation of the results, to generalize and to transfer results	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     to check and to evaluate the work                 </div>	self-control and self-evaluation, plan correction, documentation, presentation of the result

The learners have got some freedom degrees for variations of solutions. They control and evaluate themselves. The instructors become learning advisors, who motivate, have conversations, check fields of knowledge, instruct the learners, carry out outside evaluation as well as teaching industrial safety instruction.

## **The evaluation of the performance**

### **The yearly report**

Each learner gets marks for the projects during the training year. Credit Points are recommended for an European Comparison. On the yearly report the modules are mentioned which have been treated during the training year. The learner gets marks on the yearly report for each module.

### **The planning of the exams**

Within the training one intermediate exam has to be carried through at least to determine the level of the training. This is the precondition to get the permission for the final exam. This exam is carried through in the middle of the training period as a rule. It serves the control (and possibly the improvement) of the performance level. The results are included into the final exam.

The final exam is taken in front of the examining board of the responsible authority for vocational training.

The examining method is the project work. By this complex, practically oriented projects can be determined if the vocational ability to act has been developed.

Every exam performance is to judge and to evaluate by the members of the examining board (1 employer, 1 employee, 1 teacher/ instructor) separately and independently.

The examiners have to find out the exam results by means of transparent criterions written down in advance by the board of examiners.

**The didactic-methodical learning draft** is a general framework for the vocational training of bricklayers and carpenters. In the centre stand open, integrative projects which can be combined with multimedia solutions too.

The conversion of the learning draft needs a flexible handling of it. It has to be adapted to the different situations, which are determined by

- country specific, regional and sector conditions
- internal training goals
- the starting level of the learners
- the available teaching and learning aids

For it European standards are to take into consideration and are to be included sensibly.

## **Didactic-methodical Supporting Programme for Supplement Qualification Site Managers and Experts (Consultants)**

### **1. Target Group**

The supporting programme is directed at the target group civil engineer. To get the job title "civil engineer" you must have studied at a state recognized technical college or university with the final qualification engineer-diploma. After that the graduate can practice the profession of a site manager or an

expert (consultant). The specific competences for practicing that functions are developed and shaped as a rule by experiences acquired in the practice. That takes longer periods of time occasionally and it can also be marked by failures. The utilization of a supplement qualification, which creates essential preconditions for it, may be more effective to meet the requirements in high quality from the very beginning.

The draft which has been developed for that contains a system of well-chosen modules. In the field of soft skills it aims at the site manager as well as the experts (consultants). It serves the function-specific development of competence. It is a fundamental initial of potential at available practical and theoretical knowledge as well as the experiences acquired in professional occupation

Requirements for a supplement qualification in specific functions may come into being for the target group which already works as site managers and experts (consultant) respectively or for those who are going to prepare for these occupations.

## 2. Structure of Content of the Modules

<b>Basic Modules</b>	
<p><b>Module I: Communication</b></p> <ul style="list-style-type: none"> <li>structure of communication</li> <li>communication practice</li> <li>Interaction</li> <li>rhetoric</li> <li>presentation</li> <li>teamwork</li> <li>group dynamically processes</li> </ul>	<p><b>Module II: Leadership</b></p> <ul style="list-style-type: none"> <li>leadership behave / style of leadership</li> <li>leading employees</li> <li>firm identification / model</li> <li>self-organization</li> <li>management of conflicts</li> <li>competence of solving problems</li> <li>competence of giving advice and looking after</li> </ul>
<p><b>Module III: Project management</b></p> <ul style="list-style-type: none"> <li>project management</li> <li>management of quality/ quality assurance</li> <li>legal grounds</li> <li>coordination with authorities and administration</li> </ul>	<p><b>Module IV: Europe</b></p> <ul style="list-style-type: none"> <li>European law</li> <li>Vocational training and further education in Europe</li> <li>Site managers and experts (consultants) in European comparison</li> <li>Intercultural competence</li> </ul>

<b>Special Modules for Site Managers</b>	
<p><b>Module I: Building law</b></p> <p>deepening of general legal grounds  placing law and building contract law  allocation and calculation of construction outputs (VOB<sup>1</sup>/A )  national and Europe-wide allocation  procedural sequence, rights and duties of persons involved in procedures  work and task of the allocation chamber of the allocation monitoring committees  VOB/B - contract  types of contracts  performances and compensation  duties and rights of contracting party  final inspection of performance  taking measurements, settlement of account and payment of compensation  guarantee duties of the contractor  securities in the VOB – contract  procedural sequence rights and duties, taking measurements,  calculation and payment of the compensation at persons involved in procedures</p>	<p><b>Module II: Building Company / Building Industry</b></p> <p>deepening the basis of construction company  deepening the basis of process engineering at building sites,  devices and procedures at earth for preparing concrete, concrete fitting, casing construction; rack  selection of devices and coordination of performance,  comparison of procedures  technologies of sequence planning: bar graph, line graphs, net-plan technology  elements of building site preparation  basics project management  basics of quality management and of the quality assurance  principles and demands at the carrying out the construction according to LBO<sup>2</sup>  when a plot is able to be built on,  entrances, access roads, floor space distances  construction supervising body  construction planning permission process  supervision of construction</p>
<p><b>Module III: Call for Tenders/ Allocation</b></p> <p>making use of knowledge referred to projects in case of the allocation of building trade investments  working out an exemplary investment programme  project organization  performance and quality planning as well as setting up a time schedule  getting to know and making use of theme referred industrial sector software</p>	<p><b>Module IV: Public Building Law / Safety Technology</b></p> <p>industrial safety system, legal basic  tasks and benefits of the trade associations  management of building sites  responsibility and liability at the building work  device safety  depiction of process specific safety technology (e.g. civil engineering, structural engineering, dealing with danger substances and electric current)  safeguarding building sites  first aid  personal protection equipment  to practice accident prevention  tasks and duties of the coordinator for safety and health</p>

<sup>1</sup> VOB – legal basic for construction outputs

<sup>2</sup> LBO – regional building regulations

<p><b>Module V: Finances</b></p> <p>finance management  methods of costs management  types of financing  procedures of settlement of accounts  documentation and proof providing</p>	
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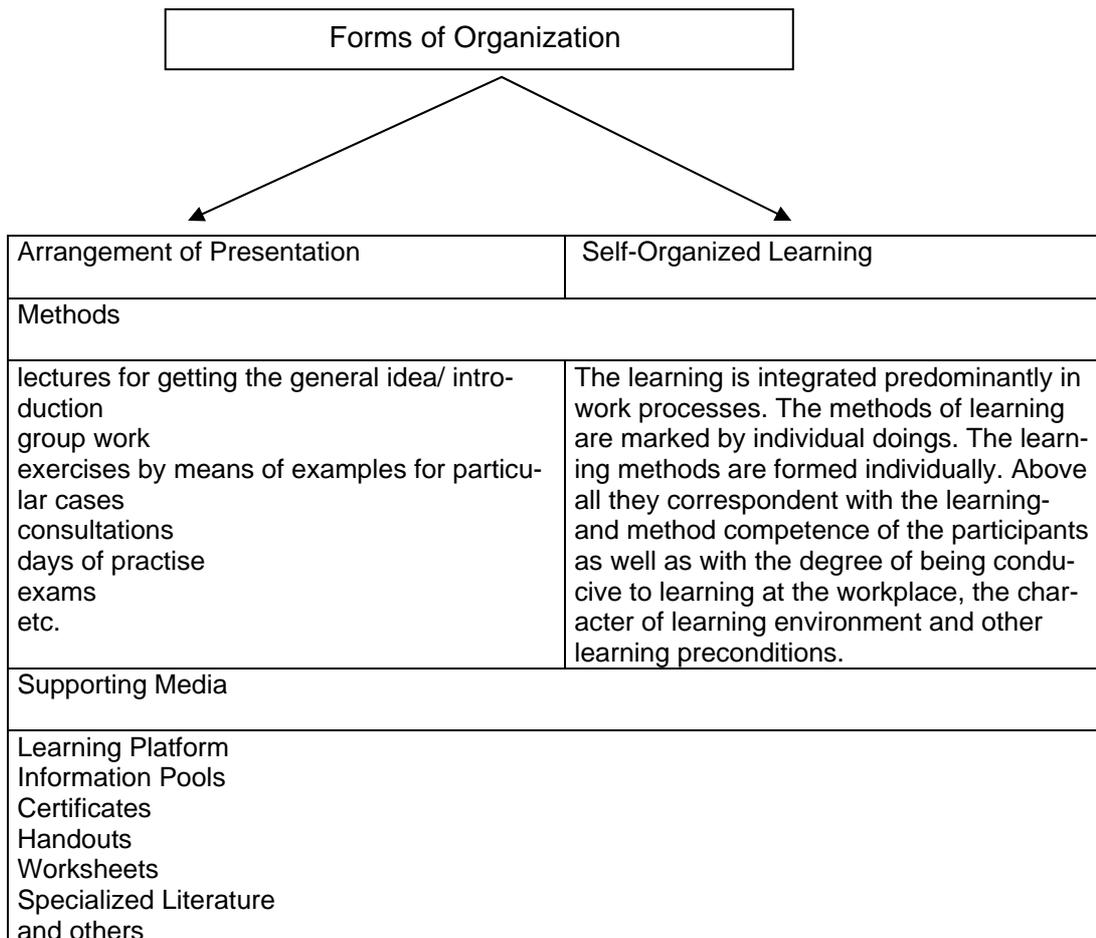
<p><b>Specialized modules for experts (consultants) Validatoren</b></p>	
<p><b>Module I: Building Construction</b></p> <p>deepening of basics for building construction  demands at a building  excavations and foundations  wall constructions  roof constructions  roof covers and roof extension  ceiling constructions and ceiling superstructure  windows, doors and stairs  basic notions and basic rules of the domestic technology  warmth and damp protection of the building cover  to seal a building  sound prevention  fire prevention  detail training and carrying out planning</p>	<p><b>Module II: Building Law</b></p> <p>System of laws of the FRG  Public law and civil law  placing law and building contract law  allocation and calculation of construction outputs (VOB/A )  national and Europe-wide allocation  procedural sequence, rights and duties of persons involved in procedures  work and task of the allocation chamber of the allocation monitoring committees  VOB/B - contract  types of contracts  performances and compensation  duties and rights of contracting party  final inspection of performance  taking measurements, settlement of account and payment of compensation  guarantee duties of the contractor  securities in the VOB – contract</p>
<p><b>Module III: Building company</b></p> <p>technologies of sequence planning  bar graphs, line graphs, net-plan technology  elements of building site preparation  urban planning redevelopment  urban planning preservation statute  principles and demands at the carrying out the construction according to LBO  when a plot is able to be built on,  construction supervising body  construction planning permission process  supervision of construction</p>	<p><b>Module IV: Call for Tenders/ Allocation</b></p> <p>project management  project organization  performance and quality planning as well as setting up a time schedule  getting to know and making use of theme referred industrial sector software</p>

## Module V: Safety Technology

industrial safety system, legal basic  
 tasks and benefits of the trade associations  
 management of building sites  
 responsibility and liability at the building work  
 device safety  
 depiction of process specific safety technology (e.g. civil engineering, structural engineering, dealing with danger substances and electric current)  
 safeguarding building sites  
 first aid  
 personal protection equipment  
 to practice accident prevention  
 tasks and duties of the coordinator for safety and health

### 3. Methods

The didactic-methodical draft takes into consideration the adult pedagogical aspects and it is aimed predominantly at self-organized learning.



The presentations are carried through by the trainers and experts of practice. Experienced partners stand by the participants to support the self-organised learning and to have conversations with them

#### **4. Organisation**

The acquisition of a supplement qualification takes place in the frame of a correspondence course. The correspondence course takes place when there are enough applicants for it after a university, technical college of higher education or technical college has done a public invitation to tender. The acquisition of the supplement qualification takes 1 semester and contains 15 weeks with 25 semester hours per week. That means for the supplement of qualification are available 375 semester hours. The participants can use supplement hours depending on the individual necessity. It is an independent decision of the participant and a self-controlled learning

#### **5. Certification**

The supplement qualification depends on the function of the participant and is brought to an end by an examination. It consists of three parts that are valuated on an equal basis:

1. In the written exam are to be solved specialized problems which are put by means of half-standardized questions.  
Time: 40 minutes,
2. In the oral exam are to be solved problems of selected specialized subject areas.  
Time: 30 minutes,
3. An exercise of a complex project task has to be worked on in which above all communicative competences are evaluated.  
Time: 90 minutes,

The valuation takes place according to prescribed criterions.

After having passed the examination the participants get a certificate of the university and technical college of higher education respectively. Here are confirmed the competences and qualifications for particular functions. It is valid in connection with the successful final qualification for a civil engineer.