

VETwin-win

MODULE 2

Design model for the practical implementation of the interlinking of vocational training and company further training in building concerns and SMEs

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General indications for the modules

An indispensable principle of this further education, which applies to all modules, concerns the particular methodical orientation that should relate throughout to what is taught, namely modern, action oriented learning methods in which the teachers do not "instruct" but see themselves rather as "learning colleagues of the learners". None of the modules address the pure determination of knowledge but should rather aim for the formation of a new practical knowledge for the arrangement of the interlocking processes of vocational training and further education from the company. The participants then connect learning in presence seminars with online learning, independent learning and learning from practical tasks carried out in their own field of work. These they can evaluate, absorb and theoretically process together with the other participants and the instructors in regular group meetings.

I. Preliminary notes to Module 2

About this module and the factors on which it depends.

In Module 2 the participants learn important design elements for the practical implementation of the combination of vocational training and operational further training from training providers and SMEs, such as the external training management, the design of the infrastructure, the creation of structures conducive to learning, the determination of the training needs, action and job oriented design of the further training as well as the fundamentals of the training processes.

Learning objectives and contents of the module

- action fields for the external training management:
- design of the infrastructure as a prerequisite for the realisation of the interlocking,
- creation of structures conducive to learning,
- determination of the training needs,
- recognised methods for action oriented vocational training and further training,
- fundamentals of the training processes in vocational training and further training,
- indications for learning design with new media from the pedagogic aspect
- action orientated design of further training
- the workplace as a learning location

What the participants/learners should know at the end

- They have knowledge of the design of external education management,
- They have learned the design of the infrastructure of training service providers,
- They know the advantages and disadvantages of studying with new media,
- They have recognised the opportunities for the creation of structures conducive to learning,
- They are able to determine the training needs,
- They have learned the fundamentals of the training processes in initial and further training,
- They can use the acquired knowledge and skills on the action oriented design of further training,
- They know the fundamentals of interdisciplinary further training in the building and construction industry.

Requirements for the self learning process

The participants work out independently an example of an action oriented design of further training in this module with practical orientation and present this suggestion to the learning group.

General methodical pointers for the instructor

The further training culminates in the exchange of presence seminars and provision of learning material on the online transfer platform or online learning platform.

Group work should be organised and take precedence in the presence seminars.

The learning and work assignments from the participants are presented.

II. Contents and practical tasks

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Practical assignments

2.1 External training management

Due to their structure and competences, small and medium sized enterprises (SMEs) are often not in a position to carry out the training of the necessary new intake and the further training of employees themselves.

The following offers pointers as to how in the content objectives for initial and further training of employees in smaller enterprises can be most efficiently achieved through the suitable forms of organisation. External management by a competent training provider could be the most effective solution for this task. The objective here is that the enterprises would be relieved of the pressure and could further develop their training competence. This would support the enterprises in all phases of the training process at all the organisational, administrative and contextual levels.

External training management is especially helpful to enterprises undertaking training for the first time. The entire range of services offered by external training management would be of interest to these enterprises.

External management of the operational initial and further training embraces the following aspects for both partners.

1. Aspect: the competence of the training provider

A training provider can only successfully provide external management if it is itself able to provide and impart new knowledge for the respective vocations. This calls for its own continuous further training. At the same time, the training provider must be financially able to provide itself with an adequate technical basis. A training provider planning to offer external management of operational training to a small firm will need a competence profile of its own. Due to the variety and specialisation of these concerns, the technical competence to provide initial and further training needs in a small firm is seldom immediately available from the training provider. It must often be acquired and developed jointly with the customer. This places new demands on the training provider as it finds itself in a continuous qualification process for the employees. The necessary competences often lie outside the pedagogic field and will increasingly call for business management, methodical compilation or communication competences.

2. Aspect: the competence of the enterprise

The readiness of an enterprise to hand over the operational personnel development to an external training provider depends on its own competence. In addition and in particular, the recognition that lifelong learning is a factor in the operational reality of a successful enterprise. The competence of the enterprise must also increasingly lie in the foresighted definition of the impending need for the necessary qualifications and its place in the company strategy. Here it should also be considered that the majority of smaller enterprises have not planned for an operating budget for further training. The pedagogic competence to enable them to run their own initial and further training is generally lacking. The enterprise often makes the technical competence of its staff available to the training provider.

3. Aspect: the cooperation between the enterprise and the external training provider

It is clear from the specifications of competence of the partners in the external management of operational initial and further training that each partner must have core competences that the other cannot have for this specific need. As a consequence, close cooperation between the partners is called for to arrive at a successful outcome. This cooperation has a crucial economic basis as both enterprises must have an interest in the stability and reliability of the performance of their respective partner. It follows that both partners must also see a financial advantage in the joint activities. In addition, an increasing mutual trust is the basis for long term cooperation which can, given the anticipated experience gained also be commuted to the operational personnel and organisational development at a later stage.

2.1.1 Action fields in the external training management

In the cooperation between a SME as the customer and competent training provider as the service provider, some *fields of action* have arisen for the external training management. These enhance the respective strengths of the partners to their mutual advantage.

The strengths of the enterprise lie undoubtedly in the technical specialisation and principally innovative working infrastructure within the firm.

The strengths of the training provider naturally lie in the pedagogic competence of its staff and in the learning infrastructure within its concern.

The joint fields of action for the external management of an enterprise in the operational initial and further training by a training provider are a result of the serviceable character of the qualification measures and the customer orientation of both partners.

1st. Action field: *Consultation and moderation*

The first field of action for external training management concerns the ongoing consultation between the partners, targeting a close cooperation to their mutual financial advantage. The economic aspect plays an important part, even if it were not at first the instigation for cooperation from the enterprise. The most important reason is always the intention of the enterprise, in the interests of the concern, to enhance the professional competences of its staff. This includes first of all the analysis of the actual qualification needs relating to the perspectives and the current operational situation within the firm.

The consultation poses initially such questions as:

- whether the necessary competence of new employees could perhaps be acquired at a more reasonable cost,
- whether the present personnel meets the requirements for a vocational company qualification,
- whether the employment of trainees has an advantage over vocationally targeted further training for the existing personnel,
- whether the training provider must make a personal investment if initial or further training measures for the enterprise is provided,
- whether, for economic or other reasons, the measures should take place directly in the enterprise as a workplace.

Here, trust plays an important role. Unconditional openness and mutual respect are the only recipe for success for an enterprise when arranging external training management by a training provider. The moderation of the external training management will be reciprocally observed by both partners.

2nd. Action field: *Development of measures and customer participation*

The joint development of a training programme for company further training for employees or the participation of the enterprise in a company assignment suitable for training employees is an additional field of action for external training management. The development of a company specific training programme for the enterprise in the form of a curriculum is a task that can only be tackled jointly. The economics of the attendant customer orientation must also be taken into account. It is therefore very costly for a training provider if the programme is particularly labour intensive or calls for extra investment. At the same time, it is understandable if the enterprise is not satisfied with the measures being offered are merely the standard programme for other enterprises. The direct relevance to the individual enterprise is the most important argument for external training management if the enterprise should run to such expense.

The most important tasks in the development of a programme, i.e. pedagogic competences naturally fall to the training provider. The training provider needs therefore increasingly to acquire competences

which must come from the technical ability and knowledge of the instructors; this might often relate to new technical or technological developments. In the interests of a complete service therefore, it makes sense for them to bring in external experts too if their own competences prove inadequate.

The instructor/advanced instructor in the training facility and the instructor / mentor in the enterprise are not only teachers but also in equal measure learners in this field of action. They must accordingly acquire additional qualifications in order to bring the innovations required for initial and further training into the enterprise. The resulting professionalisation of the operational and vocational training also causes changes to occur in the functions of the employees. This also means independent further learning in the enterprise in must be factored into the concept, with the result that methods and techniques of learning for adults must be imparted and modern learning media (E-Learning) should be used.

Apart from his usual activities, the instructor becomes increasingly an assessor of demands, guide to the learners and consultant to the enterprise. This function widens the scope of his tasks considerably and leads decisively to the transition from training provider to a service for SMEs. Only with the additional qualifications of the employees can a training provider succeed in the long in the training market.

3rd. Action field: *Joint implementation and execution of measures*

The focal point of external training management lies understandably in the execution of the measures. It is here that the special pedagogic competences of the training provider come to the fore. The enterprise is then faced with several demands in order to be able to influence the contents of the measures.

These include:

- The provision of company information and data which are important for initial and further training in the interests of the company
- Agreement on lesson times and learning location to allow the enterprise wider use of its own potential
- Joint involvement in the appropriate company training tasks to ease trainees into the operational processes
- Support in the induction of the employees of the company in guidance for trainees in special technical fields
- Participation in the presentation of the results of appropriate company training tasks by the learners before representatives of the company.

4th. Action field: *Finance and organisation*

A suitable financial concept is necessary for external training management in a cooperative partnership. The fundamental cost viability is paramount to both concerns.

The contracting out of training management would have a number of positive effects on SMEs which principally mean that:

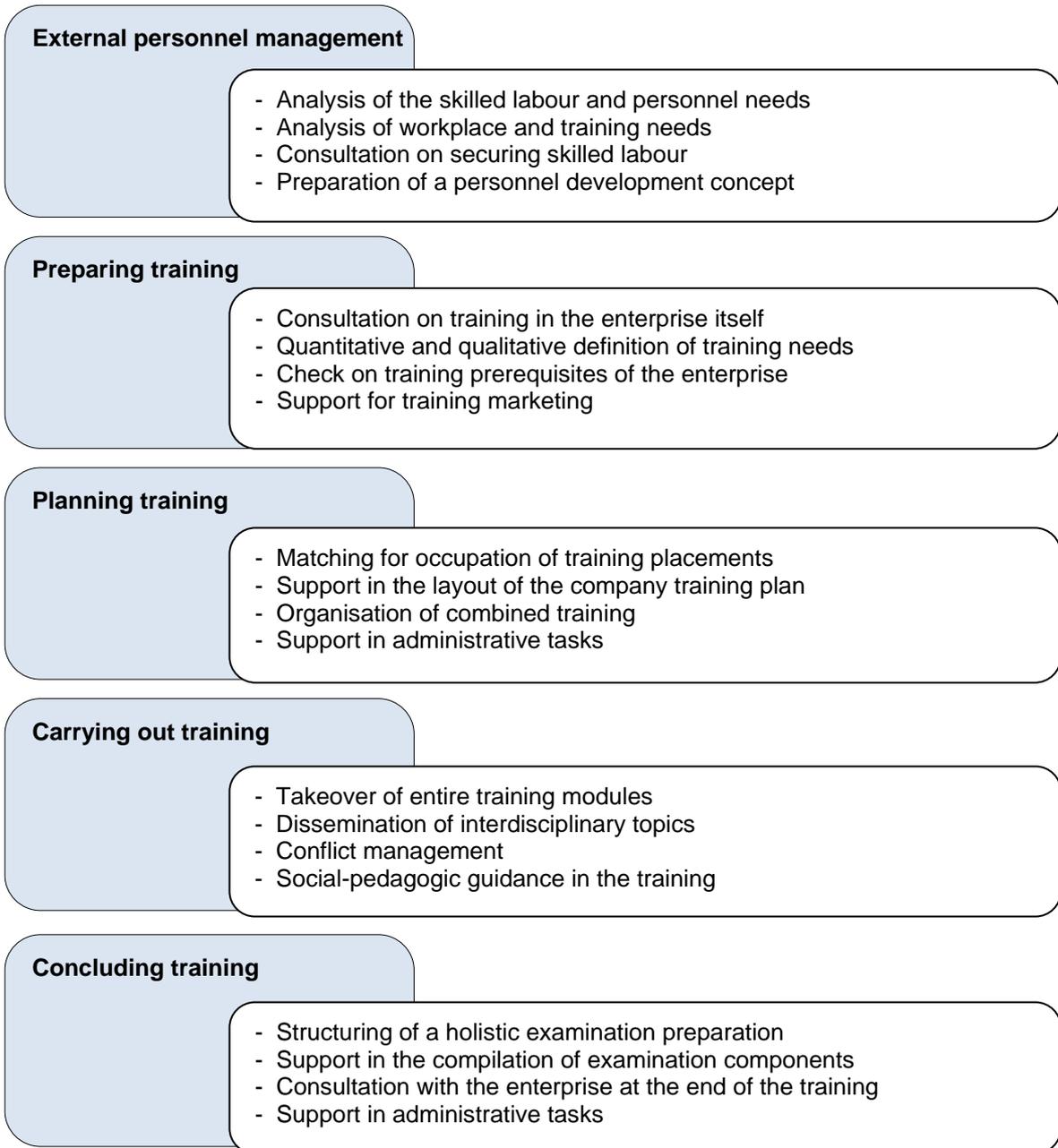
- various personnel and investments costs are avoided,
- organisational tasks can be passed to the training provider,
- the responsibility for training measures can be left to the professional staff of the training provider with pedagogic experience.

Some disadvantages could arise in company specific qualification of the employees if the enterprise plays a minor role. It is therefore essential that the enterprise and the external training management cooperate closely.

2.1.2 Support services from external training management

External training management must prepare sector specific courses and be able to offer these to the enterprise as a basis for the initial situation. This means that the strengths of the employees, former training activities and measures play a decisive role with the external training management. A number of the aforementioned offers would be of particular interest to concerns in sectors with a minimal training tradition. The offers of support could be taken up in varied intensity by the enterprise.

In the following overview the examples show the variety of support services for the enterprise in the context of the training process:



2.1.3 The skilled training staff in SMEs

Even if the vocational training has been ensured through external training management, many enterprises still involve company personnel in the training.

The 'skilled training staff' in a SME can in particular assume the following roles together with vocational training through external training management.

The skilled training staff member in a SME is advisor and confidant for trainees in the enterprise and for the external training management.

Apart from their own work assignments, the skilled training staff would have the following duties:

- explaining the work to the trainees
- imparting knowledge
- supervising work in progress
- motivation of trainees
- help in planning and implementation
- choosing the type of work
- evaluation of work results
- assessment of trainees
- help with implementation of duties within the company
- help with private and scholastic problems

Requirements on skilled training staff

The skilled training staff must meet certain personal requirements in order to take on these tasks. The general management must therefore take great care in its choice of skilled training staff. The skilled training staff would then be performing their own duties as well as training and must be able to meet both requirements. Their support would contribute to the company learning processes so that a company specific learning culture can be developed.

The skilled training staff are trusted persons within the enterprise and, by carrying out specialised and personal tasks in training the future skilled workers, would be looked up to within the enterprise.

Qualifications of skilled training staff

Due to these extra demands on skilled training staff, the question of teaching qualifications or a relevant additional pedagogic qualification arises.

It should be clear from the onset that the skilled training staff has authority over skills and competence in the enterprise and is not regarded merely as a "stand in teacher" limited competences.

The qualifications should target the following criteria:

- instruction and ability to work with materials, work schedules and didactic fundamentals provided by the instructor,
- involvement in the assignment of company tasks suitable for the training,
- involvement in the provision of workplace analyses for the trainees.

2.2 The design of the infrastructure as a prerequisite for coordinating interlinking

The interlinking of vocational training and company further training is in the first place the task of personnel and organisational development for the enterprise itself.

The success of the interlinking of vocational training und company further training depends heavily, where possible, on the provision of favourable conditions for learning in the working process. Earlier analyses on the status of the interlinking of vocational training und company further training in small concerns indicate problem areas which call for a key function in the effective design of development of employee competence. The knowledge gained shows that,

- there must be an existing infrastructure for the interlinking in the enterprise in order to be able utilise the advantages of company vocational development of employee competence,
- the creation of the infrastructure is a protracted process of personnel and organisational development and is of strategic importance to the enterprise,
- there is a significant difference between SMEs in the development of employee competence. It can be assumed that only in exceptional cases can enterprises with less than 50 employees may be in a position to organise the interlinking of initial and further training by internal measures themselves. They have an ongoing for external support in the design of their infrastructure.

The opportunity for interlinking also calls for an infrastructure conducive to learning. The term "infrastructure" relating to the interlinking of vocational training und company further training in small concerns means the availability of suitable material, instrumental and personnel prerequisites.

Personelle prerequisites

These include:

- managers with company related pedagogic competence
- instructors and skilled staff with company related pedagogic competence
- internal and external advisors and instructors capable of working together on vocational training and company further training.

Material requirements

These include:

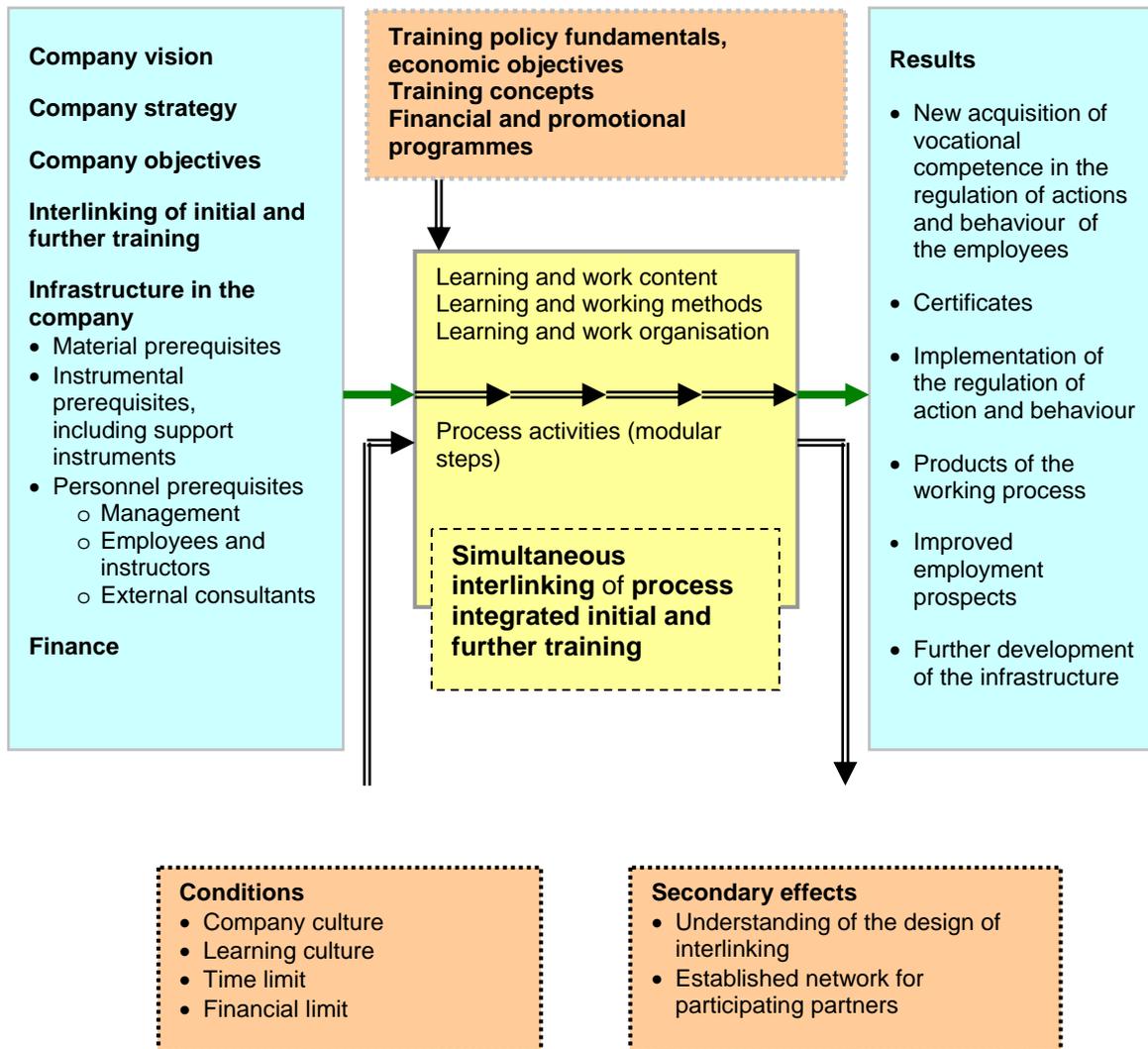
- the requisite work, teaching and learning material, including the necessary hardware and software
- supplementary workplaces and learning islands
- suitable design of learning locations, rooms with the necessary equipment to support learning
- information and communication equipment to enable collation and processing of information from textbooks, technical journals and the Internet.

Instrumental prerequisites

These include:

- laws, regulations and company agreements that promote interlinking
- a company culture that promotes interlinking
- instruments (tools, methods, work materials), which best support the interlinking
- a working, teaching and learning organisation that promotes interlinking
- the availability of the necessary learning periods
- the financing of interlinking of vocational training and company further training
- the assessment and recognition of learning and work results
- quality control of the interlinking

The following describes the order of infrastructure in the process of interlinking:



The support instruments play a major role here. Support instruments are the external means made available to SMEs to enable the interlinking.

Support instruments include in particular:

- Instruments for management (modules, assistance, methods, work materials),
- Instruments for learners (modules, assistance, methods, work materials),
- Instruments for advisors, mentors, guidance
- Information and communication facilities for the collation of information
- Working, teaching and learning materials (including self learning media)
- Supplementary learning locations with the necessary equipment.

2.2.1 The design of the infrastructure for the interlinking of training services

Since the necessary infrastructure in SMEs is often not available in full, it must first be made available by the assigned training provider.

Training providers who have developed into training services for SMEs take over the vocation oriented tuition, the selection and subsequent guidance of trainees; they provide tailor made vocational initial and

further training programmes and make the vocational-company competence development of the employees the focal point of the concepts and offers.

In the development of the infrastructure by the training provider, the following actions are called for:

Personnel requirements for the infrastructure:

- the personnel requirements will be defined by the management as the decisive factor in the profiling to a training service,
- as the personnel element of the infrastructure for the interlinking of initial and further training, a training provider cultivates a cooperative relationship with the company consultants and other experts with whom the problem situations of the customer are jointly analysed in their complexity, in order to establish the special training, guidance and advisory needs.

Material requirements for the infrastructure:

- the material requirements for the training provider focus intensively on vocational training. The technical equipment offers little in teaching content in the competence area of further training. It is therefore, for economic reasons, also not feasible to acquire expensive machines just for initial and further training. Cooperation with the company and further training in the working process within the company is therefore the preferable option,
- the training providers ensure that the necessary prerequisites of working, teaching and learning materials can be provided, i.e. for the acquisition of basic and special competences needed in the technological fields,
- the training providers and the small concern set up jointly suitable learning locations and learning islands that adequately supplement the Lehr- und learning processes and the working materials,
- the training providers ensure that information and communication facilities are in place to enable the collation and processing of information from textbooks, technical journals, the Internet and digital data storage.

Instrumental requirements for the infrastructure:

- the training providers ensure that analysis instruments are in place for their own work and that of the SMEs,
- the training providers make tailor made vocational training, guidance and consultation offers available to the company.

At present, comprehensive support for the small concern reveals considerable discrepancies in the assistance for a long term personnel development in the interlinking of vocational training and company training as well as in the continuity of assistance to the enterprise in the entire service process.

2.3 Setting up structures conducive to learning

The design of structures conducive to learning – as an important aspect in the development of the learning culture and the interlinking of initial and further training – is crucial to the competitive ability of the enterprise in the long term.

The term "structure conducive to learning" can be defined as follows:

A structure conducive to learning is a learning situation that supports the learning process in the best way possible and that encompasses the optimum development of the function of the individual structural elements in the learning process as well as the optimum linking between the individual structural elements.

Apart from traditional further training and qualification measures, learning in the working process makes a particular contribution to the development of competence. This form of learning is supported by the design of the work place according to criteria that promote learning, such as the setting up of cooperation and communication, the participation of the staff, adequate feedback over the work results or ergonomically designed working conditions.

The effectiveness of the learning process and the quality of the learning results depend heavily on how well the structures conducive to learning have been set up.

The elements that make the learning process and the development of competence possible are divided under:

- inner, individual and personality related and
- outer, social and societal related elements

Inner individual and personality related elements include:

- the individual values and norms to learn
- the motivation and readiness to learn
- the personal activity and the acquisition of competence
- the self learning competence regarding the self defined aims, the self selected content, the optimum choice of methods and the forms of organisation
- the ability to communicate and willingness to cooperate
- the innate methods and processes for the acquisition, assimilation and use of the knowledge
- the ability to self assess the learning results

Outer, social and societal related elements include:

- the general legislative und institutional conditions
- the available learning location with functions to support learning
- the social interaction in formal and informal groups
- the conveyance of information
- the available teachers, mentors, tutors or coaches
- the financial support for learning and the acquisition of competence
- the public recognition of learning performance and acquisition of competence
- the regional learning and enterprise culture

The use of structures conducive to learning and the individual application of the design options are linked to the tasks and situations that promote learning and are either personal or perceived forms and choices.

The number of structural elements conducive to learning and the numerous options means that a systematic order is called for.

A systematic order for structures conducive to learning can be illustrated by a matrix with the variables.

- Elements of the pedagogic process and
- Design flexibility of the elements

(see Dia. 1).

The personnel and objective elements of the pedagogic process can be supplemented by:

- the options for financing the learning,
- the variants of the evaluation and recognition of learning results and
- the forms of the organisation of learning,

to better clarify the options for structures conducive to learning.

One option for the structural analysis of the learning process is the system of didactic functions, e.g:

- the preparedness for the learning process
- the definition and acceptance of the objectives by the learners
- the work on the learning content
- the assimilation, processing and assessment of information
- the consolidation of the acquired knowledge and abilities
- the control and evaluation of the learning

In the design of structures conducive to learning, the possible interaction on each of these didactic functions can be analysed.

Due to its straightforwardness, the following arrangement of the design options results:

- the *individual design option*, in which, apart from the learners and their personal affairs such as family, learning group, social groups, societies etc. consideration should be given to,
- the *organisational design option*, in which, apart from the employer, institution the institution supporting learning (e.g. training services) are included.

Diagram 1: Systematisation of structures conducive to learning

Elements	Design options	
	Individual design option	Organisational design option
Personal elements		
1 Learners	Self discipline, social identification, focus on success, vocational and aims in life, group norms, values, sensitivity to problems, learner- tutor relationship	Corporate identity, Company culture, Innovation culture
2 Tutors	Readiness to learn, motivation, tutor-learner relationship, pedagogic ability	Company pedagogic competence
Objective elements		
3 Learning friendly situation	Values, Curiosity, Aims in life,	Learning friendly workplace, company culture, innovation culture
4 Learning objectives	Vocational objectives and aims in life, recognised need to learn	Knowledge of future requirements and possibilities, training offers, career options
5 Learning methods	Self paced learning abilities, ability to solve problems, ability to apply modern media	Provision of workplaces, connection between learning and work, coaching

6	Organisation	Possibility of individualisation and modularisation	Company culture, individualisation, learning islands, work integrated learning
7	Evaluation and recognition of the learning results	Personal initiative, Recognition in family and social sphere	Recognition, promotion
8	Finance	Readiness to provide personal finance, mutual support and help	Exemptions

The effectiveness of learning friendly structures depends in particular on the interaction of the individual elements and their reciprocal action in the system.

Apart from the general comments on the design of conditions conducive to learning, it is worth recommending for each single training measure or each individual training concept an analysis of structures conducive to learning with the objective of implementing the optimum design.

The design of learning friendly structures has considerable influence on the effectiveness and result of learning processes and the development of the learning culture.

Learning friendly working conditions, should be designed so that they promote learning processes.

Here the working assignments should encompass planning, preparation, implementation, controls and organisation.

Learning in the working process should be used as a supplement to the traditional further training concept as learning and competence friendly systems that call for permanent adaptation from those involved, i.e. demand learning processes, lead to the use and further development of existing qualifications. The separation of learning and working location does not promise much success for the development of employee competence.

The learning friendly design of workplaces is therefore a great opportunity for vocational further training facilities to initiate and support processes of change in the enterprise.

Vocational further concerns should profile in this field as economic partners.

For this they would be required to

- define the market based on customer needs and wishes vocational further training facilities,
- consolidate their core competence as designers of learning and knowledge processes,
- systematically develop new training services,
- organise themselves in competence in competence networks with the economy and
- relate to personnel with innovative awareness and implementation competence.

2.3.1 Examples of learning friendly working conditions

Example: *Project work*

Project work is development of competence if persons with different competences work jointly on the projects, the project concerns something new compared to old content and the acquired knowledge is systematically structured in:

- choice of projects for the development of competence and specification of time frames
- definition of the requirements for the project and the employee
- explanation of which competence the employee should acquire and in which staff grouping it should be learned in order to acquire the requisite competence
- definition of how acquired knowledge will be documented and reflected

Example: *Job rotation*

Job rotation is development of competence if the work content is actually varied, a systematic schedule is specified and a buildup of knowledge can be acquired:

- choice of work to promote competence
- customer of the time frames and the objectives of the workplace exchange
- agreement on the work schedule for the workplace

Example: *Systematic exchange of experience*

Systematic exchange of experience is development of competence if, for instance, an exchange of information in the sense of knowledge transfer takes place during a visit from other concerns or sectors:

- choice of customers, suppliers or trade fairs in order to learn new work procedures
- explanation of which exchange of experience is especially important for the respective employee
- imparting the acquired knowledge to colleagues, e.g. in workshops

Example: *Learning islands*

- Promotion of decentralised learning directly in the workplace
- Principle of semi-autonomous group work
- Integration of equipment, organisation and people
- Development of practical vocational competence
- Embedding in the development of the entire concern
- Promotion of a self critical reflection culture

2.3.2 The learning friendly situation

A learning friendly situation is especially necessary for learning in the working process in order to demonstrate to employees the necessity of acquiring new knowledge, skills and abilities.

What is a "learning friendly situation"?

A learning friendly situation is a temporal, localised ambient condition for an active individual who is classified as being at a specified place at a time specified but does not have the necessary wherewithall to handle a required situation. This situation calls for changes in behaviour regarding the surroundings and actions through the acquisition of the learning content and the stimulation of readiness to learn.

The learning friendly situation can take place either through *remote guidance* or by *personal incentive*. It can also result from a set task, a staged problem or from an independent recognition of the problem situation during the action.

The readiness of the active individual to take in the required learning process is influenced by several subjective and objective demands.

These include

- the interest in cognition,
- the social identification,
- the identification with tutors,
- the achievement of vocational and life perspectives,
- the achievement of personal advantages,
- the aspiration for social status,
- the aspiration for praise,
- the avoidance of failure

A recognised learning friendly situation defines the application of individual resources for the learning process and is decisive in the effectiveness of the learning.

Learning friendly situations should where possible be accurately and clearly presented to support the motivation of the learners and the provision of the necessary resources.

(Sources: ITF Schwerin, H. J. Buggenhagen, K. Busch, M. Schellenberg: The design of learning friendly structures)

2.4 Defining the need for qualifications

Fundamental considerations

The fundamentals for the planning of initial and further training must be the company and personal needs for practical vocational competence. In the field of vocational training the training plans define the minimum vocational requirements. Additional qualifications in training should be defined so that trainees can be integrated early into the company processes. In further training one is not bound to planning on external specifications. The company and personal needs are the decisive criteria for this and represent the fundamentals for the establishment of suitable learning objectives. Practicable methods and instruments are necessary for the analysis and definition of the need for qualifications.

2.4.1. Procedures for defining the need for qualifications

Basically, the following questions must be answered when defining the need for qualifications:

1st. step:	Which qualifications and competences do the employees need in order to carry out work assignments? (actual state)
2nd. step:	Which qualifications and competences do the employees have? (target state)
3rd. step:	What differences are there between what is needed (actual state) and what is feasible (target state)? The subjective need for qualifications is derived from this, i.e. what the employees have to learn in order to meet the requirements.

Defining the projected status

The first question to be addressed is which activities call for a specification of a requirements analysis (target state). This question is best answered by finding what has caused the need for qualifications. This might be:

- Engagement of new staff or redeployment of staff in the enterprise,
- New machinery, processes or schedules have been introduced,
- The requirements for duties have changed and the enterprise must react accordingly,
- Defects, systematically occurring errors, the quality is not satisfactory, deadlines are not being met, too many complaints,
- Decreasing turnover, increased fluctuation etc.
- Dissatisfaction, insecurity among the staff.

Any of these causes could be the basis for defining requirements.

Description of duties

If the need for qualifications is in a narrow field, the activities must be examined – the analysis of requirements. This begins with a comprehensive description of what is to be done, independent of which person, e.g. if it concerns the operation of a machine, all procedures, handling, intermediate steps and partial tasks must be noted and described.

Analysis of requirements

The requirements are defined through the description. Here it should be made clear that there is always a margin of error and uncertainty. Each partial task/ intermediate step must be addressed with the following questions:

- which technical competence (knowledge and ability) is needed?
- which methodical competences are called for?

- which social competences are necessary?
- which personal behaviour, attitude, characteristics are necessary?

The following are some of the available methods:

- Questionnaire for those concerned
- Questionnaire for experts and estimate of the requirements for a work assignment by expert surveys

Defining the actual state

To define the actual state the participating person are asked to find out to what extent they personally meet the currently defined qualification requirements and if they have a need for qualifications.

The following are some of the different methods:

- direct questions to the participants on difficulties experienced in the work regarding the requirements
- questions to employees and managers on their assessment of the need for qualifications based on the list of requirements
- Analysis of errors and anomalies
- Self assessment by the participants
- Supervision with subsequent assessment by the supervisor

Defining the need for qualifications

In conclusion, the systematically maintained basis for further planning should be the established need for training at the different levels of competence (knowledge, skills, technical competence, practical competence etc.).

The need for qualifications results from the company need and personal development situation of the employee. The following questions should be considered here:

- What knowledge and ability do the employees want to improve regarding their work?
- What interests them about their work that they have not previously understood?
- What drives the employees, what do they want to achieve?
- Which current biographical challenges must be met?

These questions go further than the vocational context. The employees should ask themselves more general questions about how they would like to develop themselves further in their personal, not only vocational development, which strengths and they want to develop and which weaknesses they want to overcome.

2.4.2 Assessment of competence and competence balances

The competitive ability of the enterprise is principally governed by the employees who are not only qualified but also competent. Competences are then based on self organisation ability. Self organisation concerns any action in open problem situations.

The following are the key competences:

- Self organisation and self learning competences
- Personal competence
- Competent action and activity
- Technical and methodical competence
- Social communicative competence

Competences can be gauged and recorded with the suitable methods and instruments.

Assessment of competence

The aim of using instruments to assess and gauge competence in the enterprise is to promote the employees constructively with an eye to the future and support individual further development.

This does not concern standardised measures but rather the individual strengths and weaknesses of the employees and instruments targeting the needs of the enterprise. The objective is the early recognition of the needs for further development of the employees in order to successfully meet the current and future requirements of the workplace.

Various methods are applied here, e.g. tests, biographical questionnaires, work simulation or tests, appraisals through portfolios or assessment centres. Various materials und exercises would help them to recognise their personal competences and identify possibilities for improvement and development.

Competence balances

Competence balances include recording, assessment und validation of competence analyses. They consider in equal measure the formal, non-formal and informal acquisition of competences. Competence balances are better suited than any other method to plan and initiate suitable further training and training steps where competence deficits are defined. They can be very effectively applied in appropriate procedural combinations with relatively light assessment and demand on time.

With the competence balance a person receives an individual test result, the European biography, the results of the personal consultation, modular, individual training programmes and an appropriate certificate of competence balance.

Defining competence in the enterprise calls for:

- the definition of organisation specific competence requirements and its implementation in personnel specific competence requirements,
- the derivation of activity and competence requirements specific to tasks,
- the diagnosis of personnel specific competence potential and characteristics and their use in perspective,
- the promotion of development of self organised competence.

This can lend impulse to:

- support of differential personnel planning and development,
- consolidation of team efficiency,
- promotion of self organised further training,
- forward looking further training planning that targets the needs,
- support of improved quality in management,
- development of new attitudes to operational vocational further training.

2.5 The pedagogic process – a model illustration

The following projection illustrates a model simplification of the pedagogic process from the didactic viewpoint. The selected model contains the principal structural elements for the instruction and acquisition process in teaching and learning situations.

This model understanding of the pedagogic process aids in the use of methodical solutions for the effective, learning friendly acquisition and transfer of learning contents. The model is therefore only the outer framework for a model implementation in practical pedagogic work.

The pedagogic process is the joint activity of teacher and learner targeting personality development. It culminates in mutual contact under optimum conditions.

1. Personnel components

- Learner
- Teacher

2. Administrative components

- Objective
- Content
- Methodical approach / methods
- Organisation
- Result

2.5.1 Process of planning and preparation

The fundamental for the planning and preparation of a single training programme is the curriculum. It determines the objective, content, method, form of organisation and reportage of results.

Guidelines for the planning and preparation process:

- meeting the aims of the curriculum and the learning objective of the module that form the structure of the learning content
- defining the methodical procedure
- analysis of the learning content of the module and the sphere of activity of the participants to determine simulated practical learning tasks, projects and learning arrangements
- didactic methodical formulation of the learning tasks, projects and learning arrangements
- plan for the form of organisation group work, solo work
- plan for the evaluation of results - presentation, test, control tasks
- determining the material prerequisites and planning for media applications
- computer work stations, participant material, technical literature, etc.
- analysis of the fields of action and modules for recognition and adjustment of interfaces
- multi discipline learning tasks, projects and learning arrangements, agreement between the instructors
- determining the prerequisites of participants - experience, knowledge, ability, initiative, communication ability, cooperative ability

2.5.2 Process of implementation

The course of a pedagogic process is almost always characterised by a series of various methodical approaches (didactic functions) of the teacher and learner.

a) Introduction

- Topic
- Overview of contents
- Explanatory talk
- Motivation
- Assignment of objectives

b) Formulation of contents

- Featured methods: speech by teacher or learner.
- Formulated and developed methods: moderated talk, using moderation equipment; self organised execution of work and learning assignments, projects, learning arrangements

c) Application of the contents

- Repetition
- Exercise – planned, systematic repetition of a task in order to develop and consolidate skills
- Training – targeted repetition of a practice element or exercise under simulated conditions in order to consolidate skills
- Practical application (sustainable learning)

d) Control and assessment of competence development

- Process check
- Results check
- Examinations/tests in various forms
- Joint evaluation, self and third party checks

2.5.3 Process of evaluation

A critical examination of the further training sequence is necessary in order to recognise strengths or weaknesses in the implementation make and amendments to the following measures.

The central questions on the preparation and planning of practice oriented further training could also support the evaluation of the process.

Central questions on the preparation and planning of practice oriented further training:

1. Is the determination and acquisition process logically constructed and fully comprehensible?
2. Are the learning contents suitable to target the planned learning objectives?
3. Are the methods used suitable to target the planned learning objectives?
4. Have suitable practice oriented projects and learning arrangements been developed to support the self organised learning process in the different learning locations?
5. Is the form of organisation (i.e. group work etc.) suitable to target the learning objectives?
6. Are appropriate instruments for recording and evaluation of acquired competences available?
7. Is the appropriate selected media available as support for the active determination and acquisition process?
8. Have the interfaces for the other action fields and modules in a suitable form been formulated?
9. Have the requirements of the participants been considered in appropriate form?
10. Has support for the learning process been planned?

(Quellen: ITF Schwerin, H. J. Buggenhagen, K. Busch, M. Schellenberg: Die Gestaltung lernförderlicher Strukturen)

2.6 Learning with new media from the pedagogic aspect

It is important not to view media supported learning as something singular that alone can lead to a better learning result and better learning access.

It is of crucial importance when designing a media supported learning ambience to apply all kinds of pedagogic basics of learning and the didactic-methodical considerations of learning process design.

Design elements of the learning process are:

- Learning requirements
- Analysis of needs
- Determination of learning objectives
- Choice of content
- Determination of the didactic-methodical design
- Learning organisation
- Evaluation and assessment of the results

There is always the question of if and how media application in individual learning processes can reasonably and effectively support the development of technical, methodical and social competences.

Without professing completeness, the following are some of the opportunities and risks in media supported learning from the aspect of learning process design:

	Possible opportunities	Possible risks
1 Record of learning requirements	- Application of assessment tests to enable a more exact differentiation	- Assessment tests do not adequately record learning requirements, - False conclusions
2 Record of need for learning	- Application of action oriented, simulated work tests - Rapid evaluation - Visualisation of the results	- Indicators not adequate or truncated
3 Record of motives	- Rapid evaluation opportunity enables multiple applications in the learning process, - Visualisation opportunities	
4 Determination of learning objectives	- Flexible and varied progression to previous analyses and also third party and self paced learning are possible	
5 Learning contents	- Enables learning from the most current contents through use of online media	- Competence zum Auffinden und zur Auswahl suitable contents notwendig - Inhalte sind nicht lerngerecht aufbereitet
	- Media allows the learner access to virtual reality content	- Virtual reality content could be perceived as reality - Risk of manipulation

	<ul style="list-style-type: none"> - Learning contents can be Optimally selected and combined under aspects of development of technical methods and social competence. 	<ul style="list-style-type: none"> - Lack of clarity in single components of competence development
	<ul style="list-style-type: none"> - Learning material can also be structured externally by the learner continually to suit the individual acquisition strategy 	<ul style="list-style-type: none"> - Insufficient competence in the use of the media for individual structuring of acquired learning material
	<ul style="list-style-type: none"> - Learning material can be easily accessed by learners - Further training is effective from the cost-utilisation aspect 	<ul style="list-style-type: none"> - Individual learning needs not sufficiently addressed
6 Methodical progression in the self paced learning process	<ul style="list-style-type: none"> - Flexible combination and individual design of learning contents is possible, - Individual learning tempo, - Contents can be skipped over, recapped, consolidated 	<ul style="list-style-type: none"> - Learning competence is necessary in order to enable the right decisions
	<ul style="list-style-type: none"> - Enables worldwide communication with co-workers/other learners - More opportunities for interaction and cooperation 	<ul style="list-style-type: none"> - Face-to-face relationship with communication partner is more difficult
	<ul style="list-style-type: none"> - Action oriented simulation of real processes is possible 	
	<ul style="list-style-type: none"> - Motivating elements can be effectively introduced (pictures, video sequences etc.) 	<ul style="list-style-type: none"> - Too much emphasis on emotional components, impairs cognitive acquisition
	<ul style="list-style-type: none"> - Various channels of information collation and processing can be called on 	<ul style="list-style-type: none"> - Surfeit of impulse through contents and media - Risk of superficial discussion
	<ul style="list-style-type: none"> - Exercises can be personally selected and repeated at will - Higher degree of reality exercises is possible - Cooperation from a distance among mixed learners is possible (intercultural competence development) 	<ul style="list-style-type: none"> - Project related learning, - Presentation of results to a learning group etc. is difficult
	<ul style="list-style-type: none"> - Development of media competence 	<ul style="list-style-type: none"> - Excessive demands regarding the necessary media competence
	<ul style="list-style-type: none"> - Development of foreign language competence 	<ul style="list-style-type: none"> - Foreign language competence is developed, especially reading and writing
	<ul style="list-style-type: none"> - Calls for personal activity during learning - Self paced learning is called for 	<ul style="list-style-type: none"> - Methodical competence is called for - Presentation of information found on the Internet but no successful learning result

	<ul style="list-style-type: none"> - Individual contact with the learner during tuition is possible, - Inhibitions before the learner group are avoided 	<ul style="list-style-type: none"> - Limitations on personal contact with tutor and other learners.
7 Organisation	<ul style="list-style-type: none"> - Relative independent time frame - Approaches are minimised - Learning in the workplace is favoured 	<ul style="list-style-type: none"> - Little or no influence of the social group - Media must be available - Problems with hard/software
	<ul style="list-style-type: none"> - Times for lighter performance requirements and improved acquisition ability can be chosen 	<ul style="list-style-type: none"> - "Last minute" completion of assigned tasks
8 Determination of results and evaluation	<ul style="list-style-type: none"> - Optimum action oriented control of learning success 	<ul style="list-style-type: none"> - Insufficient exploitation of possibilities for action oriented control of learning success
	<ul style="list-style-type: none"> - Feedback of learning success through media supported evaluation procedures is possible at any time during the entire learning period 	<ul style="list-style-type: none"> - Tardy or inadequate help and orientation with learning problems

Regarding the role of the learners, it can be determined that they become active in self organisation and motivation. Learning and special media competences are especially important.

Regarding the role of the tutors/instructors and the assurance of quality it can be determined that:

- the tutor must have the ability to consult on the use of new media relating to learning requirements and learning needs,
- must be competent in the design of pedagogic procedures and
- must have pedagogic, technical, didactic-methodical, media technical and social competences.

Checklist for the evaluation of media supported learning offers

For the evaluation of media supported learning offers the following checklist offers some guidelines:

- What are the aims of the aspiring learner? Are the objectives described in the learning offer?
- Does the learning offer include the opportunity to determine the learning requirements and needs, is the definition action oriented?
- Is the learning offer flexible enough to meet the learning requirements and objectives?
- Are the learning contents fixed or flexible? Do the offers allow for self paced learning?
- Is personal activity expected during learning?
- Can the latest information be included?
- Are the contents being offered technically correct und conducive to learning?
- Are there links to other information sources?
- Is interaction from learners required?
- Are technical, methodical and social competences required?
- Is the verbal presentation conducive to learning, are glossaries offered?
- Can the individual choose the pace of learning?
- Does the design of the learning offer meet learners' expectations regarding times and locations?
- Is there an action oriented control of the learning success, how is the general success result evaluated and certified?

2.7 The action oriented design of further training

The action orientation itself is not a method but rather a comprehensive didactic approach which is open to numerous methodical design options.

In vocational teaching all forms of learning are applied in which the learners can choose and run their own learning process, such as project method, group work, instructive text methods, learning arrangements, work instructions or problem oriented seminars. The design of an action oriented seminar is supported by the use of various appropriate media.

Which orientation points are feasible for the design of an action oriented seminar on the basis of learning-psychological recognition for tutors/instructors?

1. Organisation of an active, practice oriented situation.
2. The active situation targets the experience of the participants.
3. The handling of the active situation is increasingly independently planned, implemented, corrected and evaluated by the participants.
4. The action enables the participants to grasp the reality with is the most effective way.
5. The learning processes used in the action are guided by social and cooperative communication processes.
6. The results of the implementation are a reflection of their use to the company.

The following typical outcome can therefore be expected in the phases of an assigned project:
The participants are assigned a complex, practice oriented practical task and:

- seek information on the existing problem,
- analyse the problem,
- work out various solutions,
- evaluate the solutions,
- decide on a variant and settle on a solution,
- apply the solution concept and document the means,
- check, evaluate and document the results.

The projects cover the complete vocational knowledge in a form that targets and complies with all aspects of knowledge and their use in solving the problems.

All through the concrete technical knowledge, various competences are promoted by the execution of the project and are emphasised and assimilated to a high degree of self initiative in the further training, such as:

Interaction in the learning group:

- group learning, group work
- changing phases of solo and group work
- informal learning and reciprocal information

Self pacing and organisation of the learning process:

- planning of time, steps, methods, assignments
- decisions on variants, action, concepts

Multi discipline competences:

- flexibility and adaptability,
- informative ability,
- creativity in finding new solutions,
- awareness of problems and problem solving ability,

What should be considered in the design of action oriented further training?

The action oriented design of further training calls for new forms of behaviour and competences from both tutors and participants. The tutor will increasingly assume the role of moderator, advisor and coach, especially in the case of learning on site. This means more responsibility for both partners. The following requirements should be considered, in particular during the preparation:

- active teaching and learning processes call for new forms of cooperation between tutors and instructors and also the respective learning locations. Project related cooperation is necessary in order to coordinate the contents and methods of learning arrangements,
- some preparatory measures are called for in "Project learning" and "Learning in the group" from tutors and participants,
- the role of the tutors changes. They will need experience to assume the tasks of moderator, advisor or coach,
- the participants are not familiar with the forms of learning and the learning opportunities that can result from project and group oriented learning have not yet been recognised.

Demands on the tutors and instructors

The tutors and instructors are no longer teachers in the classical sense; they are increasingly becoming managers of the pedagogic process and partners of the participants.

The successful design of seminars demands that:

- the actions are experience targeted and the participants can learn actively while focusing on results,
- during the seminar the independent processing of contents, practical exercises and theoretical background information are varied,
- the participants have the opportunity to develop their own action oriented seminar concepts and bring them under discussion,
- the participants have the opportunity to exchange personal experience when developing action oriented seminar concepts.

2.7.1 Proven methods for action oriented vocational initial and further training

Vocational further training has an advantage over normal training in that it is more flexible and can react faster to technical or organisational changes in the practice. This advantage is especially apparent in additional qualifications and leads to a firmer practice orientation.

The following outline some methods and procedures for the design of action oriented vocational initial and further training.

The project method

The project method has definite plans by which skills and abilities can be independently acquired in the greatest depth by the.

Some defining aspects of the project method:

- it is suitable for combining different teaching disciplines and learning locations and targets the most complex and real elements,
- it improves the interaction of different teaching disciplines in that they are interdependent in the implementation of the,
- it promotes cooperative learning and team work in the learning and working process,
- it promotes a sense of responsibility to the group in the individual learners.

Working with the project method often involves five phases.

1st. Phase:	Start phase with the formulation of the project to be implemented
2nd. Phase:	Preparation phase with the formation of the working groups and advice on problems
3rd. Phase:	Planning phase for the individual steps and decisions on solutions
4th. Phase:	Implementation phase with the application of the project and description of the working steps
5th. Phase:	Evaluation phase with checks and presentation of results.

The application of the project method calls for the interaction of tutors and instructors from different teaching disciplines and learning locations. The advantage is that the learners are involved from the project idea through to the presentation of results. In this way the activity and motivation of the learners is required right from the start and their technical, methodical and social competences in their unit are emphasised in a concrete and comprehensive product. The application of the project method is labour intensive in its preparation and demands high vocational competence from the tutors. The close interlinking of practical und theoretical fundamentals is one advantage of the project method. The only problem may be the differential assessment and evaluation of the learners' performance.

The learning arrangement

The learning arrangement consists of didactically formulated learning material for the independent und action oriented acquisition of complex training contents by the learners.

Some defining aspects of the learning arrangement:

- it offers a complex learning situation with interlinked contents that use a practical example, a real vocational or a practical company requirement,
- it offers in content and time a comprehensive learning situation as the simple lesson,
- it demands the concentrated advisory function from the teaching staff, self paced learning and consequently the activity and motivation of the learners,
- it demands and promotes thought and actions in close relationship through the complexity of the learning elements and supports the assimilation of creativity of the learners,
- it targets the work in the team contributes to the development of social competence.

The work with learning arrangements consists of 3 phases in the implementation and application of the method.

1. Phase:	Introductory speech and explanation of the learning situation
2. Phase:	Guidance in the learning process and advice from the tutors , self paced learning and work for the learners
3. Phase:	Joint assessment and evaluation of results

Learning arrangements can be applied in all learning locations and during the entire vocational initial and further training. Discussion in cooperation with other learning locations should be arranged as to how best avoid too much or too little challenge to learners. The learning arrangements can include new self learning contents and also offer the opportunity to reinforce multi-discipline knowledge and awareness.

The coordination of learning arrangements is relatively time consuming and calls for some vocational and teaching experience from the teaching staff. It only requires from the learners simple methods and techniques of mental work and knowledge of working with the literature or computer to compile and process information to make this method effective.

Group work

Group work is an organised form of cooperative learning and division of work by several learners with the same learning objective.

Some defining aspects of group work:

- it uses temporary learning and group working in learning processes,
- it can be applied in all learning locations and used for different learning objectives; project groups, consulting groups, training groups or simply learning groups can be formed in this way,
- it is an initial stage for die group work and work scheduling in an enterprise,
- it coordinates the specific skills and abilities of the group members and leads to a group effort which generally surpasses the sum result of all individual efforts.

By using group work the established development phases for a team is recognisable:

1. Formation phase:	The members organise the division of work, the rules of cooperation and the appropriate methods
2. Conflict phase:	There are conflicts and polarisation of opinions on carrying out tasks between group members
3. Norm phase:	Reservations over group work are overcome, the first group norms develop and joint cooperation begins
4. Work phase:	The group structure has formed and the group works on the joint objective

The application of group work must be prepared fundamentally if it is to be successful. The group work must be purposefully prepared with simple role play or joint exercises. Group work will shorten the communication and decision channels. There is however the risk that individual group members could become dominant and dampen the enthusiasm for individual effort. The group effort is dependent on the

level of communication in the group and the guidance of the teaching staff which is seriously challenged as moderator and initiator of the process.

The work schedule

The work schedule is the direct introduction of the learner into the practical activity in a learning workshop or a company by the tutors.

Defining aspects of the of the work schedule:

- it targets the development of practical skills in the vocation or for an activity,
- it promotes the independent working approach of the learners and assures a successful experience through the manufacture of a product,
- it prepares for the implementation of theoretically acquired knowledge in the practical activity and gives the learners concrete pointers on carrying out the work schedule.

The work schedule generally consists of four phases:

1st. phase:	Explanation of the practical task, familiarisation with the technical documents and materials, information on the time factor, quality parameters and safety at work
2nd. phase:	Demonstration of the work procedure by the tutors at a slow pace with tips on difficulties etc.
3rd. phase:	Independent work by the learners, if necessary under guidance of the instructors and checks by the by the tutors
4th. phase:	General assessment of the work assignment and evaluation by the tutors.

The work schedule is the principal form of introduction for the learners into the practical, vocational and operational activity. The time factor for a work schedule should normally be kept brief. Work schedules however are often overburdened with theoretical learning material which has no direct connection to the work assignment. The practical activity, even in a brief schedule, must to the theory. the instructions from the tutors should quickly relate to the independence of the learners. Even if the time factor plays a part, the chief aim is the qualitative execution of a work assignment and the training in practical skills in the vocation.

2.8 The learning field concept

The learning field concept is of open design and offers the tutors a wide teaching margin. The start point is vocational practice which leads to practical vocational competences (technical competence, social competence, personal competence).

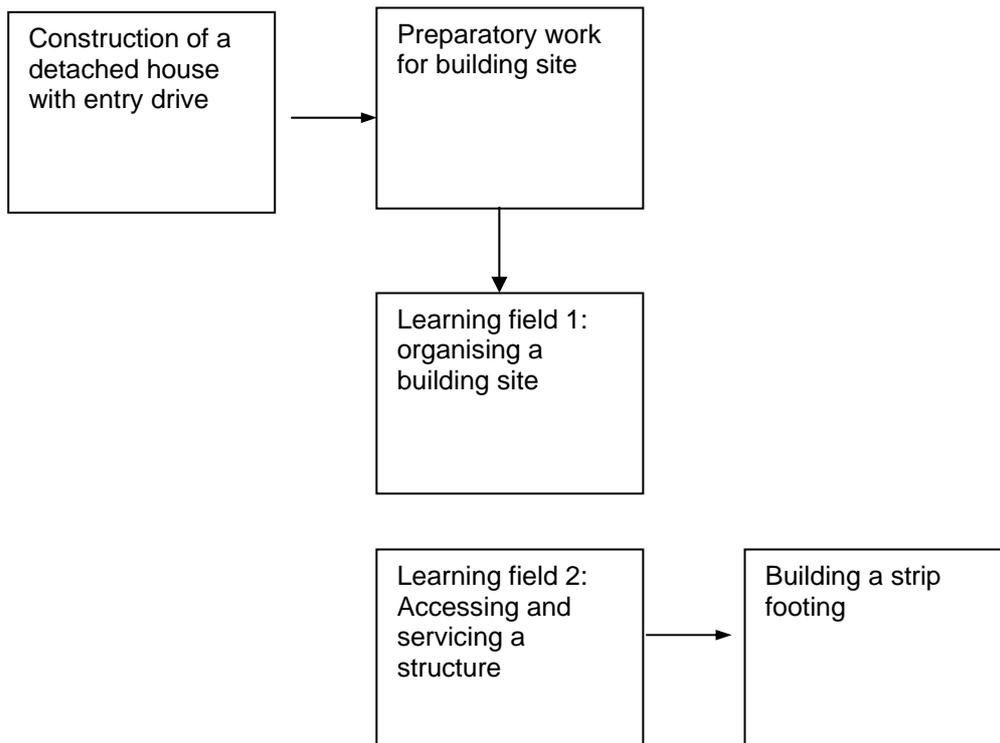
Description of "learning field":

- learning fields consist of learning aims, learning contents and scheduling values
- learning fields target vocational tasks
- learning fields encompass multi discipline skills and knowledge
- learning fields enable the dissemination and acquisition of knowledge from engineering, ecology, organisation and business administration
- learning fields enable the situation related development of active competence
- learning fields offer a wider margin for open design training
- learning fields call for multi disciplines and increased independent learning

Example for the development of a learning field:

Learning field: construction of a single shell building		
Building equipment	Technical mathematics	Technical drawing
<ul style="list-style-type: none"> - Types of wall and their tasks - Artificial bricks - Building lime, mortar, mortar groups - Dimensional details in construction - Masonry bonds - Scaffolding - Sealing materials 	<ul style="list-style-type: none"> - Dimensional details in construction - Building materials requirements 	<ul style="list-style-type: none"> - Isometry - Working drawings - Scale

Learning with learning fields (example from the building industry):



The formative guidelines for learning with learning fields are:

The practical element:

The learning fields target the complex work processes in the firm

The action targets:

The action targets are particularly important in multi discipline and situation related competence formulations.

The open design:

The open design offers a large area of content which is first applied on site in order to account for regionally specific conditions.

2.9 Multi-discipline further training in construction work

The objective of multi-discipline further training of skilled building workers is to enhance methodical, technical and social competences so that complex work processes can be better carried out. All areas of content in the curriculum cover methodical, technical and social competences in the development of competence to implement company tasks on the building site.

The following are the focal points in further training processes:

- knowledge dominated aspects (multi-discipline technical and procedural knowledge),
- skills dominated aspects (acquisition of practical skills when handling new technologies, materials),
- ability dominated aspects (teamwork abilities, communication skills)

A curriculum can be an open design further training concept based on action fields and targeting the specifics of the building processes. These action fields are in modular form and target logical, interlinked contents suitable for finding complete solutions to complex problems.

The assignment of respective action fields in modules is because a relatively comprehensive topical field can be compiled in one module. A module covers all the necessary technical details of the mediation and acquisition processes such as:

- the assignment of concrete training objectives,
- the contents the further development of competences (methodical, technical and social competences),
- the didactic methodical concept,
- the organisation of the learning process of the participants with particular emphasis on the construction site as a learning location,
- the forms of securing and assessing results.

In addition, the modular construction of the curriculum offers the advantage that modules can be used either singly or independent from each other. The participants first receive an overview in action field 1 of the fundamentals of a further training topic. After learning these fundamentals the optional uses and related skills and abilities are taught in detail in different levels of ability. In the interests of safety during practical assignments there is a further module illustrating the use of skills and abilities on the building site.

2.9.1 Structure of a sample further training model for site management staff (site foreman)

The target here is the vocational action competence of site management staff at site foreman level. This competence enables a site foreman to handle all tasks without limitations in the management of a building site. It is the result of the acquisition of knowledge and abilities through vocational experience and systematic learning.

Partial competences

Site foreman competence can be divided in four partial competence areas:

- technical
- organisation
- staff management
- training

As these partial competence areas are not isolated from each other in vocational practice but are rather specifically related, practice related situations must be assigned as tasks to prove site foreman competence. For this examination, tasks with different requirements should be assigned (such as technical, organisation and staff management) and at the same time contain requirements related to the respective competence areas.

Action fields and action competence

Each of the partial competence areas, technical, organisation and staff management is composed of four competence fields. In these action fields all activities and action situations are principally organised by site management staff.

The technical competence area includes the following action fields:

- surveying
- using machines and appliances
- using mechanised building procedures
- health and safety.

The organisation competence area includes the following action fields:

- assisting in building planning
- organising work schedules
- quality control of the work
- optimising cost and use effectiveness.

The staff management competence area includes the following action fields:

- staff management
- effective staff deployment
- involvement in staff development
- communication with builders.

The sum of all the competence areas serves to broaden the requisite knowledge and abilities. The subsequent examination is in the form of complex situational tasks demonstrate the integration of the competence areas into vocational competence of the site foreman.

While the partial technical, organisation and training competence areas and their respective action fields are fundamentally similar for all sectors and business fields, a different variant for construction and one for civil engineering must exist for every action field in the technical partial competence area.

(Quelle: Syben, Prof. Dr. Gerhard: Weiterbildung in der Bauwirtschaft, Heft 75, BIBB, Bonn 2005)

2.9.2 The workplace as a learning location

A learning location for vocational initial and further training is a place in which objective, content related, methodically ordered and organised vocational forms of knowledge, skills and abilities are acquired. In vocational initial training the technical schools, the training facilities and the workplace are the three actual learning locations. Close cooperation between the learning locations is the ideal objective which is however very difficult to achieve in practice. The challenge is the improvement of collaboration between learning locations through action and practice oriented concepts and a sustained communication process between the participants.

The following problems in the form of learning organisation can arise between learning locations:

- systematic differences in the content
- differences in the dissemination of learning content
- separation of theory from practice
- different currency of the content
- different staff with different experience and competence

Learning in vocational initial training takes place in a predetermined learning situation that leads to targeted, systematic and controllable learning. In vocational further training there are further forms of learning which also exist in vocational initial training. These include in particular unconscious learning, which occurs in the working process or in social contact with other people or groups. The close interlinking of learning and working leads to a uniform process of lifelong learning in vocational further training and in other learning locations to pedagogic and didactic considerations.

The "workplace" learning location has particular significance because here vocational competence development in the practical activity is more strongly influenced and proven. The workplace learning location needs no tutors in the usual sense. Learning is not as such consciously recognised as it cannot be formalised there. Informal learning in the workplace needs naturally defined organisational framework conditions in the workplace and learning friendly conditions for the workers and learners.

Such workplaces lying outside the company play a special role and are characterised by a limited time frame, rapidly changing action fields and high complexity of the tasks. Building sites are an example of such workplaces.

During the further training the greater portion of the learning at the building site can be acquired by use of a mobile working and learning island. Seminars at building firms can supplement and support this process. They serve chiefly in the preparation of operational learning processes, tackle practical multi-discipline problems systematically and offer help in solving the problems at the source. The use of different learning locations will ensure the close linking of theory and practice plus a high calibre of acquired knowledge.

The learning processes at the building site can be analysed through their didactic functions. They enable the conscious definition of the learning process and recognition of the design options.

The didactic functions include:

- the preparation of the learning process,
- the comprehension and acceptance of the objectives by the learners,
- the work in the learning content,
- the assimilation, processing and evaluation of information,
- the reinforcement of acquired knowledge,
- the control and evaluation of the learning

etc.

The didactic functions are independent of learning location, even if they experience significant differences in the various learning locations and phases in the vocational -operational competence development.

They differ from each other regarding their formative effect

- in the vocational initial training and further training
- in self learning processes and formalised learning processes
- in learning in the working process and in leisure time.

If one examines the didactic functions of the learning process in depth for the concrete competences that can be acquired and assimilated on the building site, the following aspects become clear.

1. Aspect: *Assimilation of vocational knowledge*

The workplace as a learning location serves more for the acquisition of vocational knowledge directly from the working process and less for the acquisition of new technical knowledge for multi-disciplined activity.

2. Aspect: *Acquisition of new vocational skills*

Apart from the acquisition and application of skills, the workplace as a learning location also serves in particular for the acquisition of vocational skills for multi-disciplined action fields.

3. Aspect: *The acquisition of media competences*

Multi-disciplined activities call for the proficient handling of modern information and communication technologies and equipment. The skilled building workers acquire special media competences directly from the working process at the building site.

4. Aspect: *The acquisition of new social competences*

Multi-disciplined activities at the building site lead to new social competences for team work, cooperation with the customer and other building operatives.

5. Aspect: *The development of problem free competence*

The ability for multi-disciplined activity leads to a higher awareness of problems among skilled building workers. Sie lernen neue Methoden der Problemstrukturierung, Problemlösung und Problembewertung kennen.

6. Aspect: *The formation of a new learning and working culture on the building site*

The further training measures for interdisciplinary work leads to a new learning and working culture on the building site with positive effects on working behaviour and the working environment.