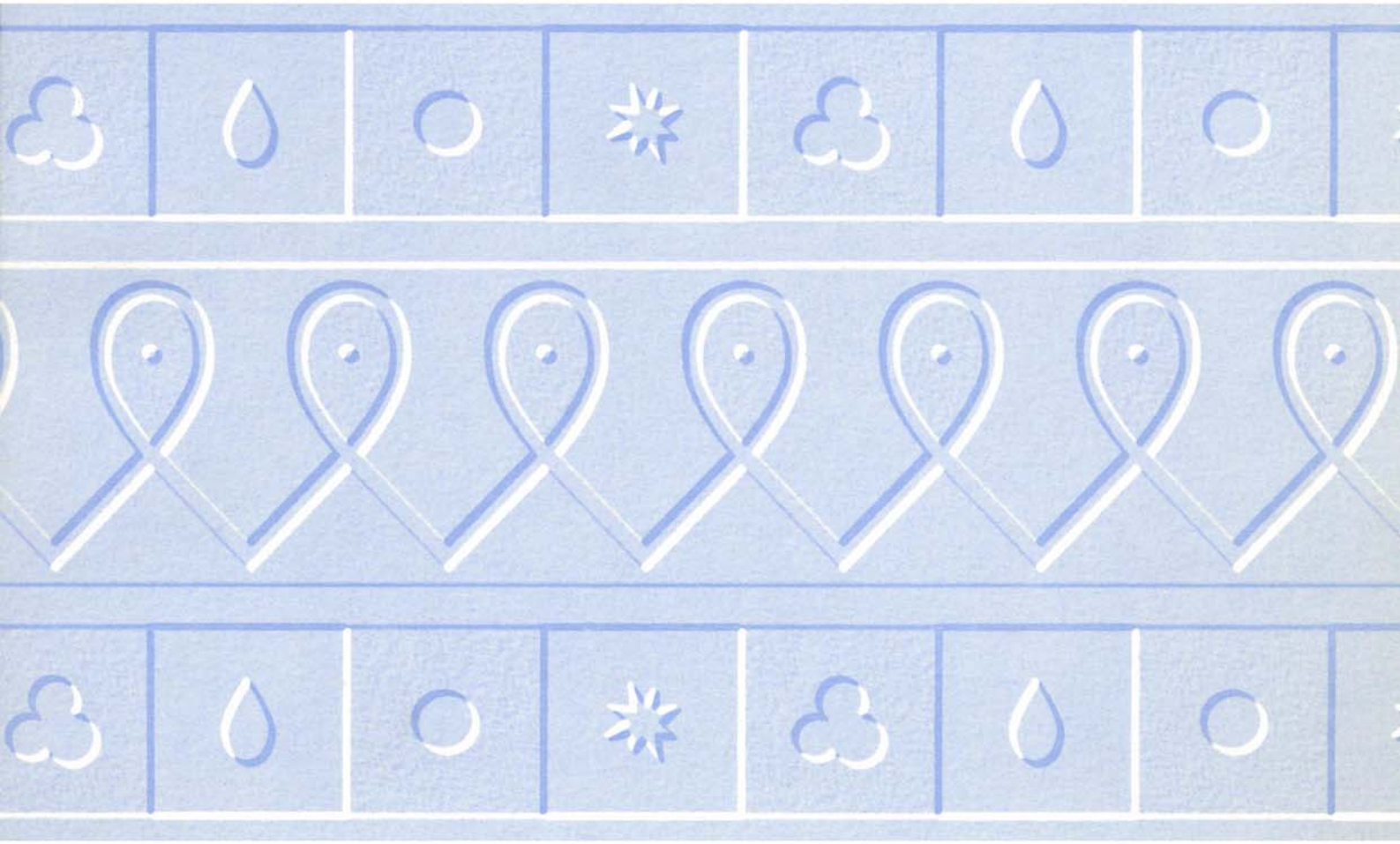
Division 404
Private Sector Promotion and Vocational Training



Vocational Training

Curriculum Development and Revision

Integrating Business Topics into Industrial-Technical Training

Guideline for Implementation

Deutsche Gesellschaft für
Technische Zusammenarbeit (GTZ) GmbH

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Foreword

When the interested layperson hears development cooperation and vocational training assistance, s/he immediately thinks of dual training, vocational schools, or craftsman and technician training. Long-term successes here at home, these approaches developed into major exports of German bilateral cooperation over decades.

Anyone following developments will know that the industrial-technical training of skilled labour in many partner countries has reached its limits on the labour market. Young people and adults - the bulk of the population - in most cases lack economic and social access to such long-term training. Pressure on national governments has resulted in more discriminating demand for cooperation approaches. Needs have diversified due to a broader range of target groups. Alongside customized short-term term training, further training and retraining, German vocational training assistance now includes another facet: support for industrial-technical long-term training. This overlaps with business promotion. System development support is not just a catchword; it has become a vital activity as an almost inevitable result of this spectrum of advisory services.

This has its implications for industrial-technical training assistance, whose scope as a one-dimensional promotion measure is narrowly confined by the low level of industrialization, division of labour and undiversified enterprise structures in the various economies. Production and technical services in themselves do not generate income unless there is a real or prospective market for them. Training must cater for this.

Supplementing industrial-technical learning with business-administrative and managerial skills and knowledge brings it more in tune with reality. This is a two-fold gain for purposive training: it meets the demands of companies for broadly qualified skilled manpower to cope with increasingly complex tasks, and it affords trainees greater opportunities to market their competence as wage-earners or as self-employed. This is where the present guide comes in. It helps to give shape to training processes. That is all it can and should do. This is why the authors see the guide more as a set of signposts pointing thinking processes in the right direction. It is not a set of rules and regulations.

The more firmly business topics are integrated into industrial-technical training, the more adaptable training design will have to be. We are not promising to make your work simpler or ease your workload, but we hope this guide will make your curricular work more effective.

We thank all GTZ field and head office staff involved in preparing this guide, especially the vocational training projects in Uganda, India and Chile. Let us hope that in the second phase the guide will be put to widespread use. A monitored introduction is already planned for Albania, India and Zimbabwe.

Elisabeth Bähr
"National Vocational Training and Development Programme"
Harare/Zimbabwe
January 1997

Dr Klaus Przyklenk
Division 4040
Private Sector Promotion and Vocational Training

Eschborn, January 1997

Curriculum Development and Revision

Integrating Business Topics into Industrial-Technical Training

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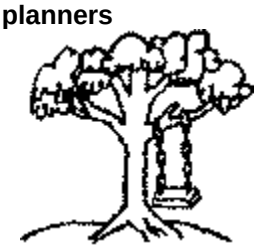
Figure 1: The 'long march' of the planners

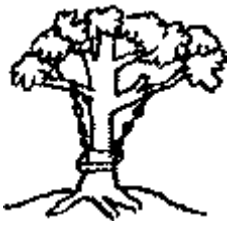


1
The local expert wants a plain, project-friendly facility.

2
The expert team makes a proposal and starts planning.

3
Applying regulations on contracts for work and labour, Head Office amends the draft again.

4
GTZ Head Office is happy to take up this suggestion and approaches an external team of experts..



5
The team prepares a draft that meets all the curricular provisions and it is approved internally after objections have been registered.

6
After all bureaucratic hurdles have been overcome, the plan is implemented by experienced practicians.

Part I: Introduction

Foreword

'Lonely Decision' is a film about a plane hijacking. The plane is boarded in the air with the help of a new special aircraft. All the terrorists are killed but just before the arch baddie dies he shoots the pilots of the Jumbo jet. One member of the anti-terror squad that has stormed the plane is now faced with the job of landing it. He has only flown a couple of hours in a sports plane and has never sat in a Jumbo cockpit. A stewardess assists him in this difficult situation. He is sitting there rather helpless amidst hundreds of instruments, switches and levers. Whatever he cautiously does after switching off the automatic pilot there is a warning signal. The two find the pilot manual and start looking for key terms. For example, they find an entry under landing speed, which means nothing to them because they do not know the weight of the plane or many other specifications so they try out a makeshift mean figure. Hardly have they finished the procedure when the warning signal returns. Our heroes get increasingly nervous. Whenever he is in danger of being paralyzed by the host of options in the manual and the danger involved, our learner pilot repeats to himself that he has to think it out on his own, that it is nothing but a plane. With this mental approach to the challenge facing him, he finally manages to land the plane well enough to save the lives of all the passengers. This was his aim and not to make a perfect landing by the book.

How to read this guide

When reading, you should not confine your attention to the checklists at the beginning of the guide, but should read it all to gain an overall picture and general grasp of the task. When you go on to implement the project you can then reach for the guide and look up individual points again.

These two ways of reading - all the way through first and then later a selection - pose very disparate demands on the presentation of a text. A text conceived for the selective use of information requires far more subdivisions into individual units, but this partitioning impedes the flow of text which the reader needs to obtain an overall picture. We have therefore decided to precede the text with lists of the major points, but these will only be useful as part of the overall context. The checklists cannot be understood properly without the following explanatory text. So it is important that you do not stay put at the checklists, but make sense of each point and interpret it in the light of the subsequent text. To help you do this we have collated the headings in the checklists and the explanatory text and given references to the more extensive text in the checklist heading.

The first question: Why should industrial-technical qualifications be supplemented by business skills and knowledge?

Field experience repeatedly gained in local industrial-technical training projects indicates the need to supplement technical training with business topics. Precedence for industrial-technical training is not in dispute, because there is an urgent need in many emerging economies and newly industrialized countries to improve technical and craft skills to raise the quality of products and sell them on the market. Now there is no question that gearing training closely to industrial-technical skilled worker qualifications poses problems where the percentage of jobs in the modern industrial sector of emerging economies and newly industrialized countries is declining and in a substantial number of countries the number of jobs are diminishing in absolute terms as well.

The division of labour in large-scale enterprises between technical and business activities does not exist in most micro and small enterprises of emerging economies and newly industrialized countries either in the formal or informal sector. Technical and business work here are still interlocked. This also holds for the craft occupations. Here too business topics must be added to technical training particularly when training also has the labour market policy aim of self-employment in addition to wage-earning. The basic model of skilled worker training must therefore be enlarged to impart qualifications for activities below the level of highly developed industrial structures and complex technical services.

Having recognized the need to supplement training so far with business topics, there are a number of ways to design business training:

1. We can try to use or develop a concept that applies for all industrial-technical training projects (worldwide) alike.

2. We can take over a special concept already devised for a certain project for our own project.

3. We can develop our own model.

Though common, the first two approaches do not make sense in our view. We are very much in favour of the third option, developing our own training concepts tailored to our own needs.

Let us first explain briefly why we reject the first two options. We argue that the differences between various projects in different countries are too great, because the kind and scope of business activities are subject to a host of specific determinants. The particular shape these take affects the business operations and related training requirements. These determinants include operating and organizational requirements, sector-specific features, regional, national and economic conditions, technical, economic and social progress and cultural characteristics. Under these circumstances the everyday economic process of production and exchange of goods and services takes place in disparate ways and at various levels. So there cannot be one single, global, general approach to business training. Such a concept can only contain commonplace generalities.

The second approach above, though, fails also due to these great differences or put differently, the specifics of the given training setting. A special concept developed for a certain vocational training project cannot simply be transplanted to another.

Whereas a global concept is over-concerned with generalities, a special concept is often wholly confined to solving specific problems without systematically addressing and applying the underlying patterns of business activity to enable their application to other business operations (internal transfer within the project) or other projects (external transfer outside the project).

The global concept is over-concerned with generalities while the individual concept usually ignores them outright.

So we say the requisite training concept should not simply be 'imported' but developed locally. To do this we need to combine knowledge on general business activities, such as '*for business activities it is important to learn to calculate*' with special elements, such as '*it is important for a future electrician in Uganda to be able to cost and price electrical equipment*'. We obtain knowledge about general business activities from the subject (=business) didactic analysis; knowledge about the specifics of the local training setting, however, is furnished by the project's curricular analysis.

The business topics important for the individual project (training electricians in a production school in Uganda with additional business qualifications) are identified by the curricular analysis. The specific business skills and knowledge to be imparted (costing an electric cooker) is based on a general business calculation and learning model, the basic pattern. This dovetails special business, occupational topics for business training of electricians in

Uganda with general business subject matter (basic patterns of business activity).

Through curricular analysis (For what activities are the electricians being trained, what additional business knowledge do they need?), the general business topics which come under business didactics (bookkeeping, costing and pricing, sales estimates, efficient production) are reshaped and adjusted to the training process. Curricular analysis thus holds precedence over the business didactic analysis. We therefore stress the specifics of the individual project and not generalities in business didactics. This is why the business didactic analysis is included as a major component in curriculum development, but does not override or precede it.

Summarizing the above, we arrive at three basic curricular and business didactic principles.

Principle 1: Simplicity

Our guide is premised on practical business requirements in 'unsophisticated' production facilities and technical services. For production sequences or technical services in micro-, small- and medium-sized enterprises under formal and informal economic conditions we can identify concomitant business procedures and patterns. If necessary, the business patterns identified can then be developed into more complex work sequences and related training concepts (from basic costing to cost planning, from single-entry to double-entry bookkeeping). In the project's curricular analysis (such as activities, qualification, learning goal and learning organization analysis) the typical patterns of business activity and business topics are assembled into training modules whose scope and level are tailored to the needs and abilities of the trainees in the project.

Principle 2: Priority of industrial-technical training

The priority of industrial-technical training is a basic precondition for our proposals on how to integrate business training modules. Training topics and organization in the industrial-technical sector decide where and when the business training topics enter into the picture. If at all, changes in industrial-technical training will only be considered where they are conducive to better business training (e.g. integrating a project to link technical and business activities).

When integrating business training topics we concentrate on the interfaces (a) between production and business administration, i.e. on the most economic, systematic and coordinated in-company interaction between technical and business processes and (b) between input market, production and sales market, i.e. on how best to organize external relations (maximize efficiency of the company's marketing organization and market relations).

Principle 3: Realistic and practical training

To be (a) realistic, the supplementary business training must be linked to real-life technical training (e.g. workshop training, production school). As topics in industrial-technical training, preplanning, producing/providing, checking and utilizing products and repair services should also be dealt with at major interfaces in business terms (drawing on the dual nature of stockkeeping, procurement and work processes, which all have a technical and economic/business side). This linkup makes business decisions and routines easier to grasp.

Based on a) (linkup with the technical side), we make sure the training is b) practical by gearing it to typical business operations with an in-company or market relevance (calculating supply prices, costing, maximizing inventory efficiency, sounding out sales prospects). Via job orders and case studies relating to market trends and company organization we can help avoid an over-concentration on teacher-centred teaching methods and the associated over-abstract business economics terminology/classifications.

Part II: Checklists

Principles (in detail: pp. 9-10)

1. There is no single global model for training, as economic/business conditions differ throughout the world.

2. Universal approaches must be treated with scepticism. The same holds for test approaches adopted in some project. Even if they were successful, this success may be only be local.

3. The curricular analysis helps us identify the major business topics. It links general subject didactics with local requirements.

4. This linkup, adjustment is crucial. The guide provides details on how you to go about it.

5. Principle 1: simplicity in the guide means the concern to pinpoint, basic elementary patterns of activity.

6. Principle 2: priority of industrial-technical training means providing technicians with useful business know-how and not to train them to become businessmen as well.

7. Principle 3: realistic and practical training means avoiding over-concentration on teacher-centred teaching methods and the associated over-abstract business economics terminology/classifications.

Planning to measure (in detail: pp. 31-33)

1. Do not be a perfectionist, be more of an opportunist. Always try to achieve a reasonable degree of complexity - not too complicated and not too simple.

2. Remember the constraints on your curricular work (lack of time, material, information, staff and money). It is no good pretending. Learn to accept the 'bottleneck'.

3. Do not be frustrated by the discrepancy you have discovered between what should be and what is. You can widen the 'bottleneck'

4. There is no 'Royal Path'. There are always several options. Do not be deterred by this; view it as an opportunity.

5. In this kind of project there are no straight roads. What appear to be setbacks can be useful, even necessary.

Basic curricular questions (in detail: pp. 28-31)

1. What are the prospective target groups from industrial-technical training for supplementary business training?

2. What should the aims and learning goals of supplementary business training be?

3. How can we select business topics to achieve selected learning goals?

4. How can we organize business topics for effective training (teaching)?

5. How do we judge the effectiveness of topics?

6. How can we organize curricular work?

7. How can we test the effectiveness of curricular work?

Planning fields in the curriculum (in detail: pp. 33-36)

1. Throughout the whole project you have to organize and check, i.e. demarcate and redefine the parameters of the curriculum.

2. You must acquaint yourself in detail with project conditions, i.e. demarcate the condition fields of the curriculum.

3. You must take definite decisions on the structure and schedule of the curriculum, i.e. demarcate the decision fields of the curriculum.

1st planning step: Organizing curricular work and basic decision (in detail: pp. 36-41)

Project management tasks

1. Select the members of the curricular work group.

2. Define the basics of curricular work.

3. Define the goals of curricular work.

4. Draw up a schedule: it should be a little more detailed for the initial phases and quite rough for subsequent tasks.

5. Place the schedule where all experts and people involved can see it. It should cover tasks and personnel as well as times.

6. Determine staff available.

7. Determine finances.

8. Draft a budget to account in particular for the costs of staff and business learning aids.

9. Document curricular work: prepare for the working sessions in writing and record the outcome.

10. Allocate tasks.

What you can draw on

1. The principles of open-ended curriculum development

2. The knowledge of industrial-technical experts, the teachers and trainers in the project

3. The knowledge of the external local personnel for business training (fee-contracted staff), counterparts;

4. Outcome of a joint, cooperative understanding on the basic goals of the business sub-curriculum.

What not to do

1. Do not simply take over topics from existing business text books, learning aids or general curricula.

2. Even when you seek advice from businessmen and economics/business teachers - including local ones - they will usually cite topics from the above sources.

What to do

1. Answer the basic question: Is a supplementary business training necessary or not? Answer honestly!

2. If the basic decision is 'yes': go through the individual training courses.

3. Make a bold provisional outline of the rough fields of business activity.

4. Record the decisions.

5. Add an expert for business work and learning to the CWG.

6. Our suggestion: first develop and try out one business training or teaching unit.

Selecting the expert

When selecting the expert take account of the following:

- The expert should ideally be a planner and developer with practical business and teaching experience (in that order).

- The expert should come from the country (Europeans or national) and have practical experience in the economic life of the country.

- It is better when the expert does not come from a management school, because these experts often lack practical experience and subscribe to an abstract business economics theory.

- The expert should be willing to cooperate and communicate.

- The expert should look at the workshops and the technical training courses.

2nd planning step: Occupational and activities analysis (in detail: pp. 42-51)

Tasks

1. Determine the general economic and economic policy conditions.

2. Analyze the labour market conditions and trends.

3. Cater for the social and cultural conditions.

4. Describe the specifics of the regional project environment.

5. Describe the in-company organizational pattern and market relations of enterprises that might employ qualified trainees.

6. Discuss self-employment prospects for qualified trainees.

7. Describe the industrial-technical activity profiles including the associated business requirements both as a company and independent activity (in-company and market activities).

What you can draw on

1. Conduct an expert and company survey yourself.

2. Conduct qualitative studies in companies and analyze workplaces.

3. Interview prospective employers on the labour market.

4. Locate company interfaces between technical and business tasks.

5. Have a look at national studies and publications, sector studies, statistical material, project appraisal and implementation studies, national development planning policy, regional and branch studies.

6. Vet information from external sources.

3rd planning step: Qualification analysis (in detail: pp. 51-59)

The qualification analysis is based on the activities analysis and describes the related qualification requirements and need for improvement.

Tasks

1. Classify in the analysis the qualification requirements in specific knowledge, abilities, skills and attitudes to meet the current requirements and make improvements at certain points.

2. Try to identify development trends and the attendant technical and business innovations and assign to them the requisite qualifications.

What you can draw on

1. Single case studies
2. Market studies
3. Experience of project executing agencies
4. Discussions with

- Education experts
- Representatives of companies
- Representatives of associations
- Existing training institutions

What not to do in the qualification analysis:

1. Try not to assign individual, isolated activity elements to respective isolated qualification aspects.

2. Proceed from broader activity blocs. Group instead of separating.

3. Do not go into too much detail. Do not plan to perfection.

What to do in the qualification analysis:

1. Concentrate on the interfaces specified (procurement, stockkeeping, production/repair, sales, management).

2. Assign the qualifications to the activity blocs entailed (work activities, workplaces, work sequences).

3. Define basic qualifications as the outcome of an empirical qualification analysis.

4. Define surplus qualifications as the outcome of a normative qualification analysis.

5. Link the two forms of qualification analysis to be able to determine the necessary changes in existing working relations.

6. Draw up qualification lists as a starting point for further planning steps.

7. Supplement the function-oriented qualification lists with function-tied qualification lists to arrive at qualification elements.

4th planning step: Preconditions analysis (in detail: pp. 59-63)

In the preconditions analysis we examine the preconditions for the supplementary business training: the way the industrial-technical training project is organized and the prior education of the trainees.

Tasks

1. Check the prior education of the prospective or current trainees in the industrial-technical projects with a view to the requisite qualification and identify what basic decisions on the level of supplementary business training need to be made as a result.

2. Draw up an inventory of your own project.

3. Judge the level of national business training.

4. Select suitable training courses and interfaces for supplementary business training.

5. Estimate the duration and scope of the supplementary training.

6. Divide possible training and further training units.

7. Estimate additional staff (curriculum planning and implementation) and financial requirements - resource audit.

8. Determine the prior education of the industrial-technical trainees and gauge the basic implications for the level of supplementary business training.

9. Take basic decisions and record these.

Priority of industrial-technical project organization

1. The organizational form predetermines the options available for the integrated supplementary business training.

2. Generally these are broader in a production school than in a 'normal' full-time vocational training school.

3. Check whether the following possible advantages of production school training for integrating business topics apply to your project:

- Is the training geared to procurement and sales?
- Is it geared to prescribed national standards (technical, business, management)?
- Is it geared to activities in relation to work and learning objects?
- Does it adopt a holistic approach to technical, business and management activities?
- Is it geared to a rational organization of work and marketing and does it provide criteria for selecting suitable activity blocs and topics?
- Is work linked to learning?
- Does the training foster self-reliance in the trainees (elements of self-organization of work and learning)?

Principles for supplementary business training

1. The business training should be conducted as a project.

2. Set up the necessary organizational conditions for this.

3. Determine project elements suitable for combining with the supplementary business training.

4. The systematic imparting of business knowledge and patterns of activity should in turn be geared to this.

5. On the other hand, the search for suitable intersections for supplementary business training and its combination with the industrial-technical project should not be confined to productive or project-type training phases.

6. All phases of the industrial-technical training should be examined to see if they can be combined with supplementary business training, including workshop and theory courses.

The role of government-approved occupations in the project

1. The curricular work group (CWG) must take an occupational view of business training and its scope in the project, i.e. keep in line with the respective industrial-technical government-approved occupations.

2. The CWG may have to consider whether certain basic business knowledge must be imparted in an inter-occupational course before specializing by occupation.

3. Determine the tasks for the industrial-technical trainers involved.

4. The business experts must allocate tasks within their team (e.g. a European businessman with country experience and two local teachers).

What to do:

1. Specify the basic decisions taken when organizing curricular work.

2. Estimate the total need for supplementary training.

3. Locate areas where you can start developing modules.

4. Do not proceed from higher-level business decisions in management; address the individual functional areas instead.

5. Assess the abilities of the local teachers. If these for example cling to certain theoretical knowledge, the CWG must make added efforts to impart the goals of the curriculum.

6. Assess the prior education of the trainees.

- A good general education is more conducive to grasping more abstract business topics.

- Where the level of prior education is low, it is all the more important to gear business training to industrial-technical practice and conduct it in a straightforward way in line with the project.

5th planning step: Business didactics analysis (in detail: pp. 63-72)

Brief outline

Based on the qualification and preconditions analysis for supplementary business training, in the business didactics analysis we examine business didactics proposals. Ask yourself the following questions:

1. What basic patterns of business activity and learning can be considered for the supplementary training?

2. What economics/business text books and learning aids are suitable as a starting point for designing the supplementary business training?

3. What major business didactics criteria are applied to business learning?

What to do

• Assign business knowledge and patterns of activity to typical levels of activity:

1. Level of activity: business routines
2. Level of activity: ongoing business decisions
3. Level of activity: directing decisions
4. Level of activity: constitutive decisions

• Make sure you keep to the sequence specified in the previous planning steps: scale of enterprise - industrial-technical training -technical/business interfaces - requisite business activities -business training topics.

The specifics of business activity and the danger of thoughtless adoption of business teaching conventions

1. By its nature business activity is intangible.

2. Business teaching is in danger of getting stuck in abstractions, over-generalizing and losing touch with practical objects and activities in the industrial-technical sector.

3. Business training, then, must always refer back to practical activities in the real world.

Possible construction faults in business training modules

1. Beware of the dense, abstraction in business studies, of clinging to theory.

2. Reread the sections in the guide on construction faults and judge the learning material with these yardsticks in mind.

Fault 1: Using lists of all kinds when planning topic routes
Fault 2: Methodological 'window dressing'
Fault 3: Too little account of learners' experience
Fault 4: Insufficient economic/business expertise

Linking curricular decisions from the activities, qualification and preconditions analyses with business didactics

Explanation, bridge or introduction?

List of knowledge blocs for the training modules

- Basic bookkeeping
- Finance and financial planning
- Inventory and inventory planning
- Basic commercial correspondence
- Market surveillance and advertizing
- Production planning, product development, product improvement and quality assurance
- Locational planning
- Procurement and procurement planning
- Basic business organization and management
- Costing, pricing, calculation
- Basic contractual, employment and tax law

6th planning step: Goal analysis fin detail; pp. 72-81)

Brief outline

In this step the CWG proceeds from the rough topics developed, supplements them if necessary as it goes along and assigns to them learning goals to determine the level of learning processes. For this it draws on the findings of the business didactics analysis.

Tasks

• Link the activities and qualification analysis with the preconditions analysis (compare the entry qualifications of trainees with the final qualifications of the supplementary business training for selected occupational activities) by translating the basic decisions taken there into rough learning goals for the supplementary business training.

• Link the rough learning goals with the rough topics from the business didactics analysis and vet the selection.

• Link learning level with topics.

• Define prior learning and knowledge structures for designing the business training modules.

What you can draw on

1. The findings of the learning goal analysis in intellectual, motivational and psychomotor learning

2. The matrix for the learning goal analysis

3. The linkup of rough learning goals and rough topics (combination of curricular and business didactics analysis)

4. Demarcation of the training modules as framework modules

5. List of 'givens'

Berend: Diese Liste muß noch mal überarbeitet werden

What to watch out for

Do not detach the rough learning goals and rough topics from the order established so far.

When developing rough learning goals and topics steer your course along the following lines:

- The curricular goal, to define the kind and scope of business topics more exactly in line with the technical training

- The scale of enterprise, to pinpoint key topics for the areas

- The two levels of activity: (a) the business routines and (b) ongoing business decisions, to locate the level of learning processes and route the two module runs

Learning goal decisions

What learning goals are:

Learning goals are statements on the level of learning processes we are aiming at. They are and remain important prior information on what awaits the learners, but they also provide guidelines for the learning aids developer and assigning topics and tests. So they are major reference points.

- Define neither too many nor too few learning goals. In both cases they forfeit their guiding function.

- Do not for example draw up an over-elaborate skill hierarchy.

- Word learning goals in everyday language.

- Do not draw up abstract systems of learning goals; always keep an eye on their relevance to occupational activities.

7th planning step: Learning organization analysis (in detail: pp. 82-89)

The learning organization analysis brings together the findings of the goal analysis and the business didactics analysis.

Tasks

1. Define the detailed learning goals and detail the learning topics. The rough analysis moves on to the detailed analysis.

2. Decide how to organize the business training in combination with the technical training.

3. Decide how to refine the goals and topics specified in the modular system (training plan).

The role of the modular schedule

1. The training module profiles and their sequence furnishes the CWG with an 'ideal' plan.

2. When the CWG now proceeds to detail the learning organization, certain changes may prove necessary: e.g. leapfrogging individual modules or switching levels.

3. The 'ideal plan' retains its guiding role, because it helps to gauge the coherence of our own planning.

4. The 'master plan' will not solve all planning problems, but it is a way of assessing and guiding our own planning.

Decisions on learning organization

1. Agree in the CWG on the timespan of the business training.

2. Many factors affect this decision:

- Goals and scope of business training
- Extent of technical training
- Learning level of trainees
- Qualification of available teachers
- Willingness of businessmen and technicians to cooperate.

3. Careful! These factors are often bound up with definite interests which mean that decisions are frequently taken on planning problems to safeguard personal or group advantages and not for curricular reasons.

4. If the business training programme has to be limited for lack of time, a run-through at one level at least should be completed.

5. Start with the supplementary business project, when the technical training departs from imparting technical routines and starts with imparting productive activities.

6. Make absolutely sure to avoid a theory bias towards the industrial-technical side (parts lists for example) obliging you to impart supplementary business knowledge in a pure crash teaching course at the end of the training with no bearing on the project. This will not do the job.

The training plan and developing detailed learning goals

1. From the master plan draft a training plan for the supplementary business training.

2. This training plan must give more detailed shape to the modules developed (detailed learning goals and detailed topics).

3. Proceed from the rough learning goals and rough topics of the framework training plan.

4. This detailing gives us the respective detailed structure for the training module in the training plan detailed learning goals and detailed topics.

Developing learning aids

Developing learning aids is key for a supplementary business training tailored to the needs of trainees, specific didactic requirements and special occupational activities.

What to do

1. Develop your own learning aids for the trainees.
2. Plan time and inputs based on CWG resources.
3. Specify the first major work steps.
4. Specify what tasks can be performed before or during training.

Develop the following:

1. A learning book with the learning topics
2. A work book with tasks
3. Both books must be tailored to individual occupations.
4. A teacher's handbook with the following contents:

- Intentions and goals of the supplementary business training
- Pointers to the trainees' learning and work books
- Module survey
- Demands on teaching staff
- Pointers for using the learning and work books bearing on the individual training modules
- Help on the individual modules (goals, using the learning and work books, method and media for putting the module into teaching practice)
- Pointers on testing learning achievement

8th planning step: Training and teaching analysis (in detail: pp. 89-93)

Based on the goal analysis and learning organization analysis, the training and teaching analysis describes the training planning of the supplementary business training in tandem with the industrial-technical training. This step is a further refinement of the decision steps at rough and detailed goal level,.

Tasks

1. Plan the training and teaching units in step with the progress of technical training. This will enable you to draw on experience from previous teaching and training segments.

2. Based on the training modules, the teaching and training planning specifies definite learning goals in connection with training and teaching topics.

3. Teaching planning contains pointers on

- the social form of training and teaching
- method

What you can draw on

1. Findings of the learning organization analysis
2. Schedule for learning organization
3. Experience of teachers and observations during teaching
4. Evaluation of the training and teaching units conducted
5. Teaching planning framework
6. Pointers on suitable social forms and methods

Planning step 8: Teaching planning

• Stress in CWG work the preparation of teachers, technicians (experts and local teachers and trainers).

• Provide close guidance to teachers in the initial stages

Trainers/Teachers

1. It is essential to tell the teachers that their job is not to impart (abstract) management training in this project; they must equip trainees with practical tools to deal with occupational problems.

2. The trainers/teachers must play different roles when teaching and combine these:

- Knowledge mediator
- Organizer of problem-solving learning processes
- Moderator

3. These different roles must be practised so do not confine your teacher's training to a series of briefings.

Didactics

1. The topics have been described for the most part in the material on training modules.
2. They are geared to business practice and activity sequences, not theoretical systems.

How to link up with the technical training in the project and the national market

1. Via cooperation with the technical trainers
2. At content level by including teaching aids/media from working practice.

Method

Training method should be designed to afford insight into the role of business activities and foster self-reliance in the trainees as well as impart knowledge. Basic rule: from guided to autonomous learning.

1. Avoid lecturing or teacher-centred methods.

2. Give the trainees research jobs to do on their own workshops or the local market, for example.

3. Involve the trainers from the technical sector in the business training programme.

4. Give small groups case exercises to apply and consolidate the knowledge acquired.

5. Invite practicians to attend the training. They can help provide a motivating lead-in to the training module, provide examples and link up with applied practice.

6. Try to develop a mini project that spans the individual training module and achieves an activity outcome that helps place the topics in an overall context.

Media

1. The media used in teaching are not just there to illustrate.

2. Rather, the worksheets/forms should be designed for later use in subsequent everyday work.

3. Their practice-centred design should be a structural teaching element.

4. They should be explained or developed further in discussions with the teacher and filed along with commentaries/notes in a work folder.

5. This work folder should be used like a toolbox.

9th planning step: Curriculum evaluation (in detail: pp. 93-96)

The key question in curriculum evaluation is: What is the impact of the curricular intentions/design on the trainers and trainees in training practice?

Tasks

1. Decide when to evaluate: whether it should be ongoing or after completion of the trial run.

2. Organize the teacher upgrading.

3. Adopt an open, curious attitude and instill a sense in everyone involved that mistakes are learning opportunities.

4. The CWG must make a realistic assessment of its capabilities for evaluating the curriculum (time, money, staff).

5. Try to monitor teaching.

6. Hold evaluation discussions with the trainers involved (technical, business) and the trainees.

7. Monitoring teaching and evaluation discussions should be recorded for subsequent improvements.

8. Use the evaluation findings for planning/altering the training module and subsequent measures or similar projects.

9. Use test groups if you want to conduct pre-training tests.

   1. Test group: technical experts not directly concerned with developing the business training module.

   2. Test group: local technical trainers with company experience.

   3. Test group: industrial-technical trainees.

Self-assessment by teachers and trainers

1. Draft a straightforward questionnaire for self-assessment that permits short answers.

2. Use the following list when drafting the questionnaire:

General key questions for assessment:

1. What are the learning achievements at the end of the supplementary training?
2. What are the reasons for the shortcomings in the supplementary business training?

Special key questions for assessment

1. Was the basic curricular decision to link training goals and topics with business routines and ongoing business decision-making right?

2. How effective was the desired close link between industrial-technical and business topics?

3. What is the best way to match up the technical and business training courses?

4. Have technical and business trainers cooperated and if so, how would you assess this cooperation?

5. Do the developed training modules of the framework curriculum cover the range of necessary business knowledge for your own business course?

6. How would you assess the structure of the modules? Are they close enough to practice and is the level appropriate?

7. Do the trainers keep close to industrial-technical practice and train for practice or do they cling to abstract theory?

8. How do the trainers deal with suggestions on method (mobilize trainees, run projects)? Are they adopting a new teaching style?

9. How do the trainers respond to the notion of the business toolbox and do they view this as a major training goal?

10. How do trainees respond to pro-active, practical, activity-centred training and teaching forms? Do they draw connections with industrial-technical work operations and does that make sense to them?

Part III: Rationale

Principles of curricular construction

Basic curricular questions for developing supplementary business training

Problems of curriculum development

The following seven questions and (still general) answers address the central problems of curriculum development that must be solved in the context of the industrial-technical project and its target groups:

1st question: What are the prospective target groups from industrial-technical training for the supplementary business training?

This is the crucial question for many projects: not all technicians and craftsmen need business training. The team has two basic priority questions to discuss and settle: is there a need for supplementary training and what can be expected of the trainees in view of their entry qualifications and prior education? It is therefore vital to examine the setting and initial conditions/capabilities of the trainees before starting to plan the supplementary business training.

Search for answer:

The training needs must be determined by identifying future occupational profiles. This is not always easy, because it is often unclear what a trained dressmaker in Chile or a trained joiner in Uganda can do afterwards, whether there are opportunities in the formal or informal sector as wage-earners or self-employed. Obviously this will affect the shape of the supplementary business training.[1] The concern is to enlarge the information base in the team.

[1] The authors of the guide assume that the analyses in all curricular planning steps must be conducted with gender differences in mind. This applies in particular to the target group analysis, employment analysis and activities analysis. In the search for other pilot projects to try out and conduct supplementary business training courses, we are therefore also especially interested in GTZ-assisted projects to train women for industrial-technical occupations.

Equally important is the prior education of possible trainees. Do they have a primary, first or second secondary qualification? This decides the scope and the level of business training topics. Based on the answers to these basic questions, the next questions can be discussed and answered.

2nd question: What are the goals and learning goals of the supplementary business training?

Search for answer:

Think about the possible goals of a business sub-curriculum aligned with the industrial-technical project and discuss in the team, select the learning goals and specify the selection criteria. Give reasons for the selection of goals with activities, qualification and conditions analyses. All this need not be very detailed and precise: it is more important to look at practice and involve and ask practicians.

3rd question: How shall we select business topics to achieve the selected learning goals?

Search for answer:

Think about the topics, refer to specialist books but always keep in close touch with the technical project and its possibilities. Select topics to achieve the learning goals with brief reasons for goal-topic links (interplay between curricular and business didactics analysis: the business didactics analysis will for example point out the essential role of bookkeeping and lead into the system of bookkeeping; the curricular analysis then tells you whether the target trainees need to learn single-item or double-item bookkeeping).

4th question: How can we organize business topics for effective training (teaching)?

Search for answer:

You must locate suitable interfaces in the industrial-technical training. A case-to-case decision must be taken on whether a business training segment needs to precede the industrial-technical training to link up business topics and instruments with technical topics (topic and time sequence of business training) or whether the training in the business sector can run parallel with a certain phase in technical training.

5th question: How can we ensure the effectiveness of business topics?

Search for answer:

This depends on two things: the suitability of selected interfaces between technical and business training steps (e.g. bookkeeping as a technical and business problem) must be monitored and assessed and tasks must ensure that business instruments (such as cost estimate sheets) are actually applied to technical tasks (costing motor vehicle repair for example). The business tasks must combine technical, occupational and practical relevance (no tasks that simply call for book knowledge).

6th question: How can we organize curricular work?

Search for answer:

The best way is for the technicians in a project to see how to integrate business training elements based on their own knowledge, assisted by local business experts and/or short-term experts and referring to this guide.

7th question: How can we gauge the effectiveness of curricular work?

Search for answer:

The effectiveness of the curriculum ultimately depends on whether the graduates have actually been qualified for the occupational and activities field (external effectiveness). In addition to an external check, it might also be useful to conduct an internal check of the sub-curriculum to see whether it is coherent (congruence of planning and application and the individual steps).

To answer the key questions, we need to draft a business sub-curriculum where the business goals and topics are validated, selected, organized and applied. This prevents a blind selection based on tacit values and unquestioned preferences.

Organizing curricular work as open-ended curriculum development

Organizing curricular work

The following is crucial to the 1st planning step - the organization of curricular work. Due to its overriding importance, we highlight this general issue of organization separately from the systematic discussion of individual planning steps and deal with it in advance here. Later, in the 1st planning step we look at special organizational conditions for integrating business sub-curricula.

Solving problems in practice

Planning problem 'bottleneck'

When we look at the host of tasks resulting from the answers to the above seven questions, the question immediately arises of how we can possibly cope with this additional workload under the local conditions. We must forget any ideas of perfectionism or to return to our analogy at the beginning: we are not aiming at the perfect landing. The curricular work can only be done and organized in cooperation with local experts in a practical and open way. We are developing a curriculum under normal, not ideal conditions. So our proposals are deliberately premised on the situation facing the local planner with all his/her working constraints. These are the 'bottleneck' of the planning problem: lack of time, material, staff and money for planning work.

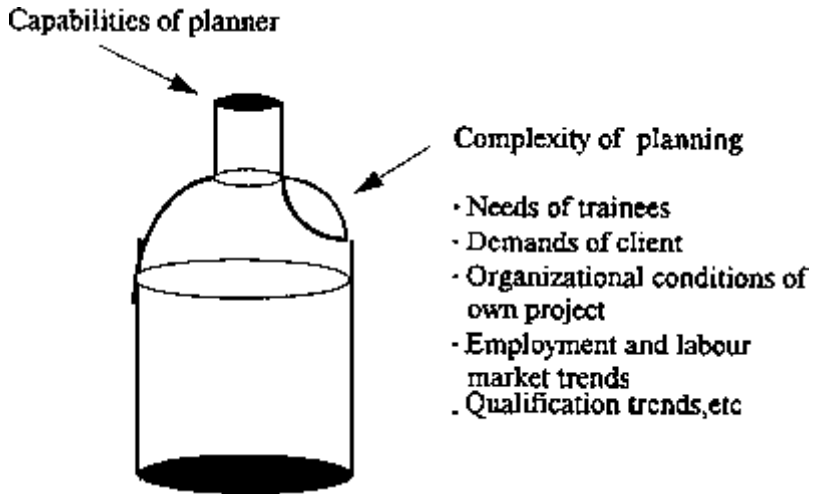


Figure 2: The planning problem bottleneck

Complexity of planning problem

Above all there is a lack of information, but even if we assume an (ideal) comprehensive information base, we still have the problem of our own limited planning and processing capabilities. The capabilities of the planner stand in no reasonable relation to the complexity of the planning problem.

Faced with the sum of planning problems and the desire to find a good solution, every planner and planning group suffers from a 'bad conscience'. The rift between the desired answer to the problem and the actual options open is too wide. We suspect that this is particularly common when technicians have to cope with the unaccustomed supplementary business training and that this causes added stress.

So the following brief advice can be of genuine practical value. Even with an array of aids, we cannot basically do anything about insufficient information (on the technical side as well incidentally). This is of course not meant as an argument for simply making the best of the

knowledge and instruments that happen to be available to a planning group - the concern should still be to improve the information base - but we can only widen the 'bottleneck' not get rid of it.

Widening the 'bottleneck'

We must face the fact that curriculum planning decisions will always be ambivalent, i.e. that other decisions are conceivable. This has advantages and disadvantages: selection options but also uncertainty. With this planning problem (integrating business training modules in industrial-technical projects) we are not dealing with simple, direct inferences from one single business didactics problem complex such as constructing modules from business text books; we have to think in a systemic way to re-link the problem with diverse curricular determinants (see contents of bottle!).

Open-ended curriculum development

So what we are concerned with here is open-ended curricular work geared to practice. Open-ended curriculum development means the planner progresses tentatively from one decision problem to the next. For lack of information we simplify the decision problem. The. point here is that these simplifications are not the result of convenience or prejudice but as far as possible the outcome of a deliberate decision-making process weighing up pros and cons. The advantage of a deliberate and reasoned decision is that it is easier to locate mistakes and hence avoid them as well. We must try to find a middle road between an endless exploration of curricular conditions aimed at a kind of omniscience and curriculum development based largely on hidden prejudices and unexamined preferences.

Planning steps in curriculum development

9 planning steps of curriculum development

Faced with the difficult challenge of curriculum development our typical response is to search. A major help is to order and subdivide the curricular problem into successive planning steps.

1. Organization of curricular work, basic decisions
2. Occupational and activities analysis
3. Qualifications analysis
4. Preconditions analysis (project preconditions, prior education)
5. Business didactics analysis
6. Goal analysis
7. Learning organization analysis
8. Training and teaching planning
9. Curriculum evaluation

Strategy of small steps

In these individual planning steps our solutions are always provisional and limited. We move tentatively forward with a strategy of small steps (muddling through). In curriculum development there is no reason why we cannot behave practically. The main point is to widen our respective information base and control the decision-making process as consciously as possible. An open-ended curriculum development is therefore never finished. Changes and improvements are always possible and made after individual trial phases. Good training plans come about less through extensive theoretical preparation than a close interconnection between theory and practice which ensures more prompt testing and improvement of the training plan.

Common to these points on an open-ended curriculum is that they stress training practice and place training staff in the role of curriculum planners and implementers. The open-ended curriculum tries to combine the advantages of the local staff, the trainers with their local

knowledge, the trainees, the teaching and practical training (= adaptability, geared to situation) with the demands of curriculum development (systematic preparation, conduct and evaluation of training). The most important curriculum planners therefore are the local experts, but they must gear their decisions to curricular yardsticks.

Individual planning fields

For our purposes we distinguish 9 curricular planning fields: curricular framework (planning steps 1 and 9), curricular condition fields (planning steps 2-5) and curricular decision fields (planning steps 6 - 8).

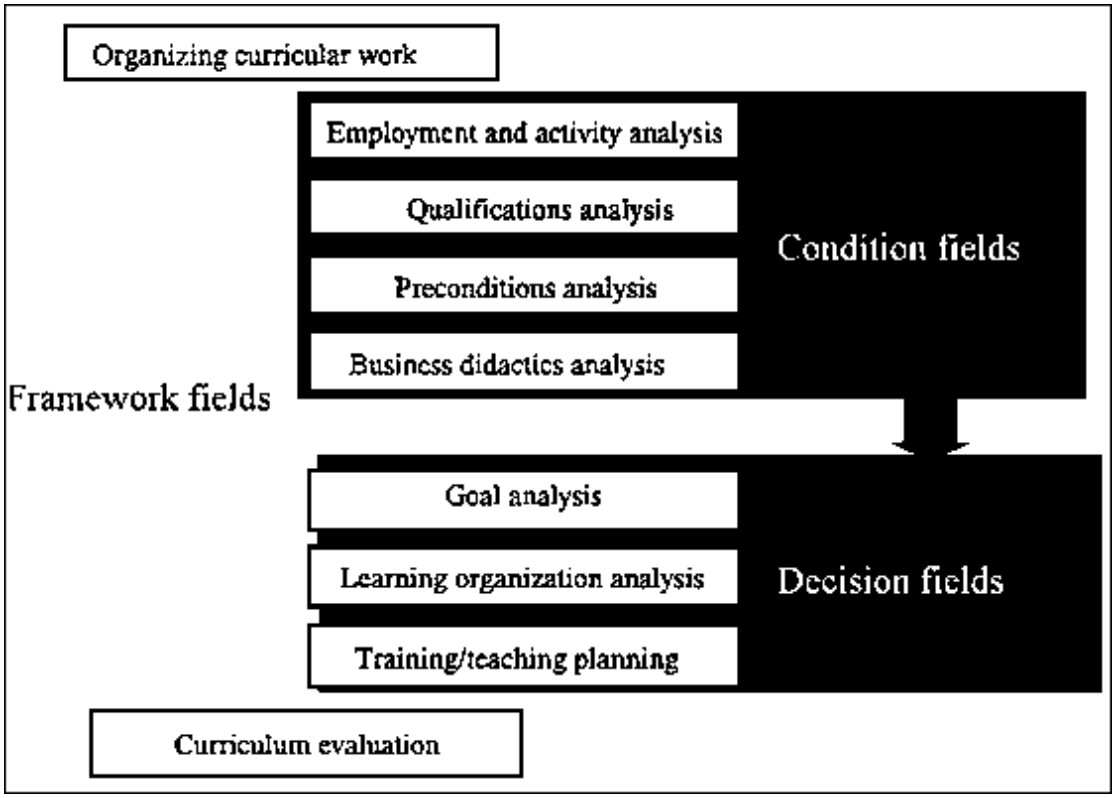


Figure 3: Planning steps in curricular planning

This division into framework, condition and decision fields is useful.

Curricular framework fields

a) It indicates the overriding importance of the curricular framework fields 'organization and basic decisions' and 'evaluation' for actual curriculum planning and implementation (before, parallel, after).

Curricular condition fields

b) The category curricular condition fields 'occupational and activities analysis', 'qualifications analysis', 'preconditions analysis', 'business didactics analysis' is where we must logically first look at the facts in the condition fields before taking decisions on the curriculum in the narrower sense. These fields pose major conditions for our ensuing curricular decisions.

Obviously we first need to know what occupational fields and activities are possible for the target group of our business sub-curriculum, before asking what qualifications are necessary to perform them. Then we ask what prior education the curriculum target group have, what they 'bring along' and what the prospects are for assimilating supplementary business training

into the industrial-technical training and then we look to see what learning topics and structures business didactics has to offer in this connection.

Curricular decision fields

c) When these conditions have been identified and evaluated, we can then proceed to the curricular decision fields to design the structure and sequence of the sub-curriculum.

Curricular decisions

Decision on rough learning goals

The first decision to take is on the rough learning goals of the business sub-curriculum, their origin and the reason for their selection. They pertain to the general areas of the sub-curriculum (training modules) and draw the rough lines on what needs to be learnt about buying, stockkeeping, work and production planning, labour costing, etc. (level of learning). The structure of the general areas results from a combination of business didactics proposals and how we bring the rough topics from prior planning steps in curricular analysis to bear on our project. The goal defined always involves a rough topic statement, such as: 'The learners know the major components of costing and can apply them.'

Decision learning organization

The second decision is on learning organization. In subject matter analysis a double step is taken based on the goal analysis: detailed learning goals must be defined and learning topics detailed. The rough analysis proceeds to detailed analysis (the training modules are specified in more detail). Here too we combine curricular specifications (training of technicians, alignment with industrial-technical activities and learning processes, learning at interfaces) and basic business didactics models. The rough learning goal and rough topic bloc 'Know and apply major components of costing' is given more detailed shape: 'The learners know how to calculate labour costs and overheads and can apply their knowledge to occupational tasks.'

Decision on teaching planning

The third decision to take is on training and teaching planning. From the decision steps at the rough and detailed goal level, we proceed to even greater detail here. The training modules are used for training and teaching planning. The definite learning goals are specified in connection with the respective topics. The training and teaching planning also contains pointers on method.

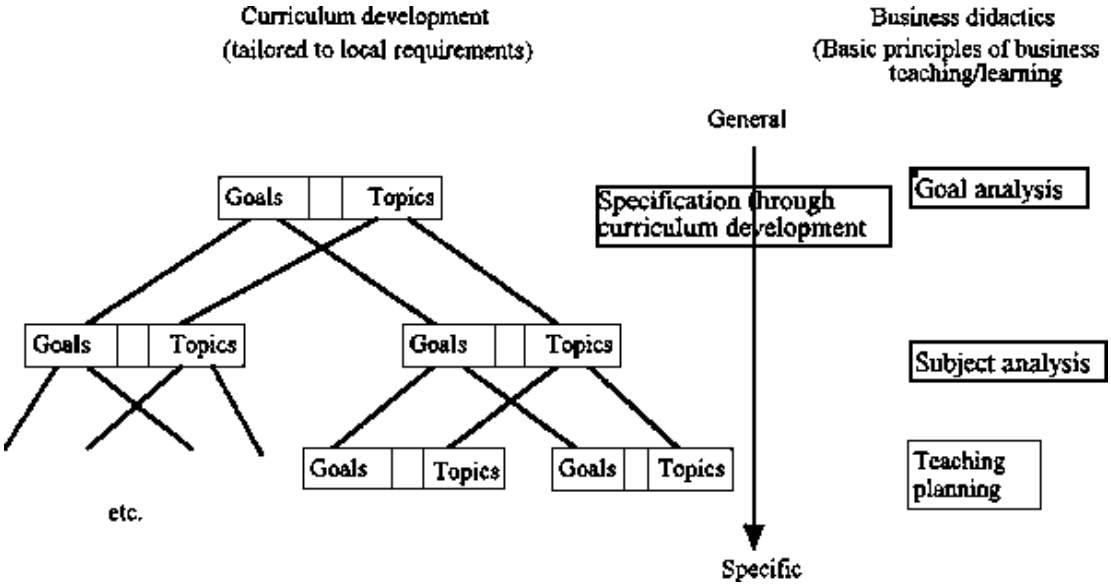


Figure 4: Breakdown of topics and goals in the auricular process

1st planning step: Organization of curricular work and basic decision

Developing business training modules is an additional task in industrial-technical projects that calls for time and consideration. On occasion in the past a 'quick fix' has been sought by simply selecting 'suitable' learning topics for supplementary business training from existing business textbooks or learning aids. In some cases too framework curricula from the industrial countries have been combed through and certain topics taken over from economic theory and simplified. Knowledge and business instruments selected in this way turned out to be too general to help the trainees in such supplementary training courses. The topics did not fit the country, the training course or the envisaged work activity.

Do not do this. Also be wary of advice from businessmen and economics/business teachers, which is often ill-considered and relies on familiar general business topics. This also applies by the way for businessmen and economics teachers from emerging nations themselves. Their training is also beset with a basic problem: worldwide, business economics and the economics taught in various training institutions based on it is very abstract and divorced from business reality.

Danger of planning to perfection

In reaction to this, though, let us not fall into the trap of planning to perfection. Nevertheless, a curricular task of ours is to organize the development of business training modules. What does this mean? First of all, we have to take a close look at our industrial-technical project with its specifics and sundry training courses and pinpoint where we can integrate a supplementary business training in the technical training courses. This basic analysis is indispensable. It has to be conducted at the outset by the technicians in the project themselves. If we are unclear about our intentions, we shall go astray. We may have to detail or revise our goals later but there is no point in detailing the goals of supplementary business training at the outset. Nor can we. At the beginning of planning work, goals are always uncertain, but they are essential as guidelines. We have to be willing to get something wrong, which is why we need open-ended curriculum development: development work in situ that approaches its goal step by step, that is prompt to apply and try out the training module with local trainers. Motto: try out and improve instead of planning for too long.

Settling the basic question

So, the technical experts should sit down with the team leader and their counterparts to settle the basic question of whether supplementary business training is necessary or not, whether we want it. We must be aware of competition with other educational establishments in the country, which might resent a kind of 'poaching'. This must be cleared up first in the 'inner circle'. There is no point consulting business experts at this point. If a project team and its counterparts are themselves not convinced of the basic need for supplementary business training for their own target group they might as well leave it at that because motivation will lapse very soon.

A look at the training courses usually quickly reveals whether supplementary business training (which will always remain restricted because we cannot impart everything) makes sense or not. We must decide this based on our own reasoning. A precise rationale can be left until later, but it is obvious that a motor vehicle mechanic who will have to cope on his/her own later on will also need to master business tasks: labour costs, cheapest supplier of spare parts, costing and billing, etc. This also applies for the dressmaker who will have to open her own dressmaking shop, but also for skilled workers who are highly qualified and will have to prepare and organize work sequences in a small enterprise. These are only examples, but they illustrate that pure technical training only makes sense under certain conditions.

The first rough decision on supplementary business training is based on the respective industrial-technical training course. Details can be dealt with in later planning. It is crucial,

though, to found the business training on the industrial-technical training course and tailor its structure (goals and topics) and schedule (when to impart which goals and topics with which methods) to the industrial-technical training. We think technicians are experienced enough to take a basic decision on whether their target groups need supplementary business training or not. After the basic decision 'Yes', the project's curricular work group goes through the individual training courses and describes the general fields of business activity suitable for the qualified trainees of the training course based on their national experience. We must draw bold outlines here to avoid confusion in the work group. After all, decisions taken can still be revised.

We gauge the basic decisions by the technician team to be important because they ensure that the link between technical and business training is maintained and enable us to evaluate subsequent business specialists. Otherwise there is a danger of their developing their own separate business training courses, which could be more convenient for all involved but is of little use to qualified trainees.

Example:

It helps to seek typical situations and 'stage' these.

Example 1: Service company: motor vehicle workshop

The customer comes to pick up his/her repaired car and complains about the high bill. The master craftsman cannot itemize the total and is quickly persuaded to charge less. He is dissatisfied with this and resolves in future to draw up a bill for labour costs and materials with each repair job listing the hours spent for each work step and the replacement parts in stock or ordered separately.

This scenario enables us to describe the business training needs based on the overall operations of this service enterprise, such as drafting cost estimate sheets and bills, improving work scheduling, planning and coordinating inventory and procurement.

Example 2: Industrial enterprise and production planning

A production foreman reports that many work sequences in the production schedule are not defined in enough detail and badly synchronized resulting in delayed transfer of inputs into the next line and interim quality assurance is not always conducted. This causes regular delivery problems and complaints, incurring substantial additional costs for the company.

Conclusion: The supplementary business qualification must focus on production planning and work pre-planning, for example, drafting accompanying documents specifying time requirements for each work segment and production line and transfer points and having personnel make corresponding entries during production (such as actual times, and quality assurance conducted).

The goals of supplementary business qualification here would be confined to 'production' would cover topic blocs such as quality assurance, production and delivery planning, basic data acquisition for calculation.

Selecting business experts

If the curricular work group has come this far and recorded its decisions, it must look for an expert in business work and learning. It must however retain control to make sure that business knowledge is imparted where it is relevant to industrial-technical training (co-determining interfaces between technical and business work and learning activities). The business expert is seldom able to do everything - planning the business training module as well as putting it into teaching practice. Experience has shown the importance of recruiting a planner and developer first who can then take charge of selecting suitable teachers or advise the technical experts in their selection.

Clearly, the selection of the business expert is key to further curricular work. Of paramount importance is that the expert comes from the country itself. He/she can be a European engaged there or a national. Practical experience in the economic life of the country comes next. In our experience it is better not to employ experts from business or management schools, because they often lack practical experience and subscribe to an abstract economic theory, divorced from the practical needs of an electrician or motor vehicle mechanic. They tend to impart basic business knowledge in pre-packed 'capsules' - such as basic single-item or double-item bookkeeping or full-cost pricing - instead of addressing the needs of a craftsman or service technician and deciding on the scope and level of business knowledge and methods from there.

Another key quality is the willingness to cooperate. The expert must want to communicate with the technicians (and vice versa of course) and gain from their experience and views, instead of clinging to his/her business expertise (expert authority). This also means that the expert must take a look at the workshops and technical training courses to find out in situ promising interfaces for integrating business training units. Ideally of course the expert should be able to draw on practical business and teaching experience, but if you have to choose between practical business experience and teaching experience, we rate practical business experience higher. It is better to trade off inexperience in teaching, especially as the technical experts can provide advice and support in curricular planning.

Qualifications of business experts

When selecting the business expert we must account for diverse qualifications that are seldom found in one person. The main one for us has been familiarity with the country and practical business experience. On top of this there are different conceivable combinations: a European expert with experience as a former business manager in a technical firm in an emerging nation develops the business training module in cooperation with local teachers, which they then apply in teaching with the various technical training projects. Alternatively, the local counterparts in the technical project develop the curricular parameters for the business training module, which is then discussed with German experts and implemented by business teachers from the country concerned.

Rough plan for curricular work
Local teaching staff

After the business expert has been found, a rough plan for curricular work is drafted jointly with him/her. Here a decision must first be taken on whether the business module should be drawn up and tried out as a whole or in steps. In line with the principles of open-ended curriculum development, we propose developing and testing a rough framework for business training or teaching unit (faster switching from development to testing). This however means early recruitment of local free-lance teachers who can help develop and then implement the unit. That is also a difficult decision, because local teachers are often proud of their theoretical knowledge and sometimes fail to grasp the need to deal with practical business training which they accord lower status.

Our experience indicates that business training - especially in practical tasks - must align itself with the respective industrial-technical training course, so the technicians - experts or local trainers - must keep in touch with the businessmen. From this phase on the curricular work group members can alternate depending which training course the business topics and methods are tailored to. Ultimately, the business training modules will address electricians or motor vehicle mechanics or carpenters.

Schedule for curricular work
Written material for curricular work

In addition to staffing, a rough work schedule must be drafted. It should be a little more detailed for the initial phases and quite rough for later tasks. This schedule, which should be placed for all experts and those involved to see, must contain time, task and staff assignment columns. Agreement must be reached on drafting briefs on the allocated tasks (e.g.

describing interfaces between business and technical work and learning contexts for the individual training courses) to steer the work in the individual sessions (document-assisted curricular work). This has the healthy effect of obliging us to prepare the work for individual sessions, which would otherwise often be wasted in random talk. A brief record of the outcome of individual sessions must also be made (recorded curricular work) to trace the individual decisions and the reasons for them and enable a stepwise refinement and development of curricula without unnecessary repetitions and loops.

Budgeting

Finally, for the decision in favour of supplementary business training, we need to draw up a rough budget. In itself this is no great problem, but you will have to check the project resources to secure finances for the business planner and the teachers. You also need to know the costs for business learning aids which usually have to be developed by the project or adapted to specific training purposes (teacher handbook, trainee learning and work books). You also have to find out whether central funds are available for supplementary business training.

At the end of the organization phase of curricular work a basic decision has to be taken that supplementary business training is needed for certain technical training courses. The next planning steps then proceed from this. Keep the basic need for supplementary training in mind but no more. The main aim of the next steps is to detail the basic decision taken.

2nd planning step: Occupational and activities analysis

Remember that for the basic decision on supplementary business training we sorted through our own industrial-technical training projects to locate interfaces for business training. This initial 'internal' analysis must now be confirmed from outside by the activities analysis where we look at the work activities connected to our training courses and prospects for their further development. This is why in a second 'outward-directed' curricular work step we look to the real world of employment and work and foreseeable trends, to the economic structure, kinds of enterprise, jobs and other sources of income in the country.

Unfitness of occupational and activities analyses from industrial countries

The extensive set of instruments of occupational and activities analysis from the industrial countries are no use here. These highly formalized instruments cannot deal with the specific work and employment patterns in emerging nations. With the high unemployment there and the resultant need to earn a livelihood outside the formal employment sectors, we must include informal earning opportunities in our analysis. It is precisely these that European occupational and activities analyses ignore.

We now approach the occupational and activities analyses, but not with a vague, broad view; we have a definite focus. This is provided by the industrial-technical training courses, for which we want to find the necessary supplementary business qualifications. If we are training manpower in the metalworking and electrical occupations, we have to take a closer look at the work activities these entail. Our concern is not to make an empirically validated and comprehensive record of occupational activities and draw up exhaustive activities lists.

Limited activities analysis

Instead, by describing bundles of activities, we want to find approaches that are plausible in curricular terms. Even for this 'limited' activities analysis the surrounding factors of influence are still extensive. To help collate this broad field of supplementary business training determinants we can assign them to three large groups (condition, decision and activity fields): these three groups bear differently weighted relations to our business curricular work and this weighting can provide us with signposts in this planning step.

Condition fields

The socio-cultural setting, the economic system and the associated development planning, the legal, fiscal and social system, the industrial and employment structure and the labour market fall under the category of condition fields. This groups supplementary business training determinants that we cannot directly influence through our business curriculum project. These conditions are important for our supplementary business training because at this level we can locate global fields of application (example: promoting the tourist trade).

Decision fields

Now comes the group of determinants that have a direct influence on our project: the decision fields. These comprise the regional economic structure with its sectors, branches and enterprises; the regional market structure with its formal and informal segments, the forms of market organization, kind and extent of labour supply and demand, the ratio of self-employed to wage-earning activity; regional development planning such as transport, economic and industrial/business development. This set of determinants is important for the business sub-curriculum because we can locate key development targets such as small and medium-sized business promotion via integrated technical-business training, promotion of startups, promotion of micro enterprises or management abilities.

Fields of activity

The narrowest set of determinants affecting the supplementary business curriculum are the fields of activity. In response to this set of determinants stemming from company and marketing work activities, we must give thought to curricular parameters, such as the selection of suitable training modules as well as make topic distinctions within the training module itself with regard to certain legal, organizational, costing, bookkeeping and other topics.

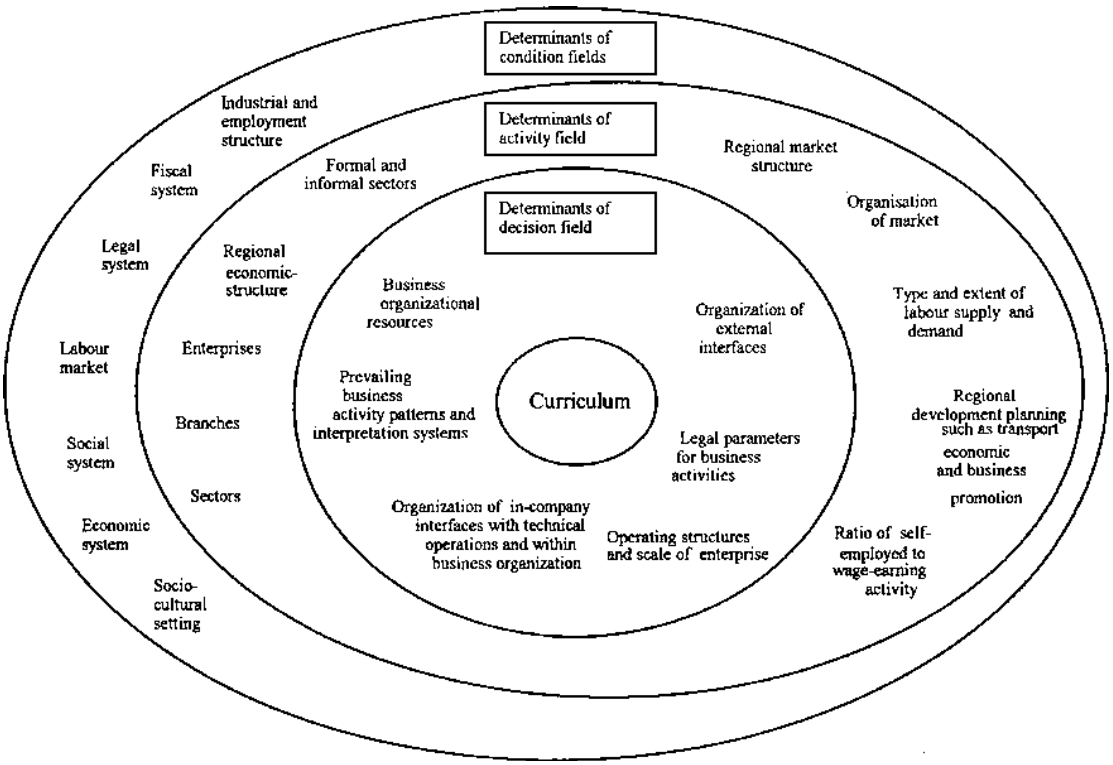


Figure 5: Curriculum determinants

Determinants from business activities

As for the occupational and activities analyses we have many determinants, which we assign to the condition and decision fields from the industrial-technical projects already underway,

but we usually lack information on the determinants of the business curriculum project from business activities. These are however crucial for practical curricular work. This is also why this planning step places stress them. They include the following:

- Company structures and scale of enterprise (e.g. operational organisation and division of labour over time (small enterprise) or within the workforce (medium-sized and large-scale enterprise); allocation of business functions such as personnel, procurement, sales, finance, costing, production planning; division of directing, executive and advisory personnel

- Prevailing business activity patterns such as common routines (e.g. rough calculation, informal agreements) and interpretation patterns (e.g. assessing markets or economic viability)

- Organizational business resources such as forms, index files, vouchers and business equipment such as typewriters, calculators, automatic accounting machines, computers

- Organization of in-company interfaces to the technical side and within the business sector (e.g. interlinkage of procurement, production and sales planning, buying and stockkeeping, operating costs and calculation)

- Organization of external interfaces (e.g. sales or procurement organisation and market surveillance, recruitment and labour market, demand estimates, production ideas and product design, financing and payment transactions)

- General company law (employment contracts) and contractual law in procurement and sales

In the occupational and activities analysis we therefore propose proceeding from the inner circle of the activity field and putting in most work here. The above set of circles contains pointers on where to connect without requiring a systematic line of observation. The determinants from the outer circles of the decision and condition fields are often familiar from the industrial-technical project and can be used for the supplementary business curriculum. If you need more information consult relevant publications.

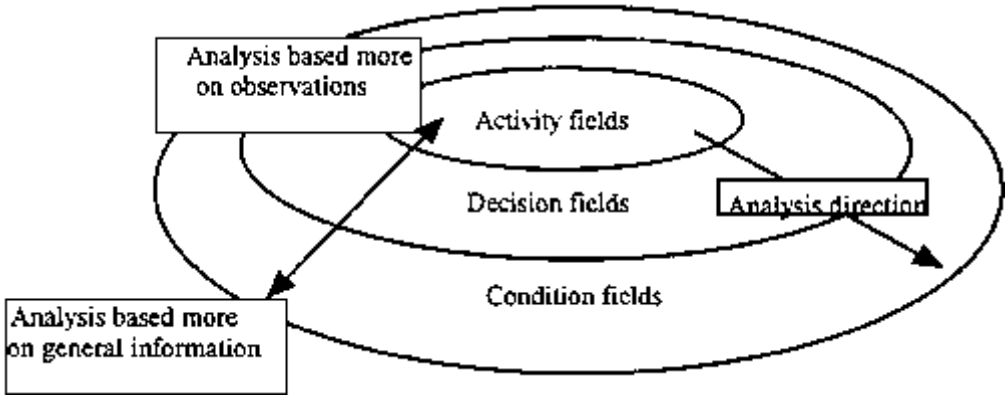


Figure 6: The general method of occupational and activities analysis

Gearing to working and occupational reality
Personal qualities for curricular work

That curricular work should be geared to real working and occupational life sounds obvious, but it is not. Very often curricular work proceeds quite differently by starting from existing curricula or training regulations from the industrial nations and then looking for topics for supplementary business training of technicians or craftsmen suitable for the special conditions in the pertinent country: we are prisoners of our own European training or biased due to our experience in other emerging economies. We must always bear these subjective

factors in mind in curricular work and put them into perspective. If we do not, certain facile decision-making patterns will be applied to the question in hand. 'The topics in procurement, stockkeeping and sales are basically suitable for the training but they must be simplified.' Or, certain topics are selected from local curricula, which appear suitable on the face of it. Many mistakes can obviously be made in this way.

So it is essential to familiarize yourself with that segment of working reality in the pertinent country to qualified trainees from your own industrial-technical training courses to be able to give the supplementary business training a precise shape. You need to be wary of a misapprehension here: particularly at the level of the activities and preconditions analysis to keep returning to the basic question of supplementary business training, i.e. to a planning step that has already been decided. It is in our view very unlikely that the basic decision taken will be revoked. The technical and business experts in the curricular work groups are far too familiar with working conditions in 'their' country for this to happen. The main point in the occupational and activities analysis is to give shape to the basic decision taken. For this we need help and supplementary information. We obtain this from the work activities, we are training the technicians and craftsmen for. We ask ourselves how the motor vehicle technician usually works in his/her country and whether our qualified trainees are qualified for this. The same applies for electricians, carpenters, mechanics, dressmakers.

Visits to companies

To do this we must have a look at the various kinds of firms that are important for our project to gain an impression of the business components of technical and craft activities in these areas. Do not confuse this with preparing a sector study. Your observations must be far more specific: because you know the training courses you can target the economic and operative working conditions to which they refer. It is important not to confine our attention to formal industrial working conditions. This holds especially for emerging economies, where the industrial sector is not growing as expected. Our surveys are always spot checks. It is a good idea to prepare the company visit but this is not always necessary. Own observations must be supported and supplemented by discussions with owners and managers. The project's business expert may be familiar with local working conditions but he/she too will have to re-examine his/her experience to locate interfaces between technical and business aspects in the individual technical-crafts activities.

Examples for the activities analysis

Here are some examples for the activities analysis, which should be concerned with interrelations between activities and not with dissecting individual (small) elements: what is the structure of micro enterprises where locksmiths weld gates and windows, how do they obtain and finance their materials, how is the work organized, do they make notes for their work, do they know something about turnover, profits, who are their clients, how do they obtain orders, can they calculate and how, how many employees do they have or are they one-person businesses?

Or: we observe joiners and upholsterers fabricating tables and chairs. We see how wood is stored in a plastic sheet under a canopy exposed to the weather, ask ourselves how to run an efficient inventory. The same applies for the sales side. Finished stools and chairs are piled up in a shack. Surely these craftsmen need to know something about efficient storage or we should ask what induced them to keep such a large stock. We then see how the craftsmen are sitting in a row in the workyard working on one chair from start to finish. There is no division of labour. These craftsmen surely need to learn something about efficient work organisation.

Or: We visit the repair workshop of a local railway line. We go to the warehouse and examine the inventory system and records (index files, inventory accounts). This gives us a picture of the kind and level of stockkeeping and inventory accounting. We could cite many more examples. Does it make sense to provide technical consultancy in development projects at all without economic components, etc.? The examples however make plain that valid curricular decisions can be made from clusters of such examples.

Key questions for the qualitative activities analysis 40
Key question areas

Under the working conditions for industrial-technical projects in vocational training assistance, we advocate a qualitative activities analysis. We propose key questions to guide our observations and questions. Key question areas in our experience are:

1. Management
2. Procurement
3. Stockkeeping
4. Production/service organization
5. Sales

Examples of key questions

Owing to the economic and operative specifics we do not want to go through the key question catalogue in detail but just cite examples. They always address interfaces between technical and business work operations and should concentrate less on details and more on the overall picture.

• How do companies obtain and record information on prices for their input materials? (key question area 2)

• How does the enterprise price its product or service? (key question area 4)

• How is information on competitor prices for own products obtained? (key question area 5)

• Can the enterprise negotiate, when and how? (key question areas 2 and 5)

• Are production inputs or finished products stored and what is the inventory method? (key question area 3)

• How are stocks financed, can the company obtain credit from customers, suppliers, banks or other persons (or advance payments)? (key question area 3)

By making these observations we can learn about the interfaces between industrial-technical work processes and accompanying business activities in procurement, stockkeeping, production and sales and from this sort out key topics for the supplementary business curriculum. We also come across the level of business techniques (e.g. hardly any records) and thus find indicators for the level of learning process (e.g. what to impart in bookkeeping). Then what we do not do is take a textbook on the system and instruments of double-item bookkeeping and simplify that while retaining the overall system: we start from reality and confine ourselves to 'minimum' bookkeeping - elementary but systematic and consistent records (e.g. simple cash accounting).

Tips on visiting companies

If possible it is best to have two observers who can sit down after the relatively brief visits and talk about what they have seen and make notes on the main points. Our experience shows that it is not essential to conduct the observations according to a set system since the range of spot checks from the informal to the formal sector and from micro to large-scale enterprise cannot fit into an all-embracing system. We have simply kept to the rough parameters of operating functions. Also it is better to note the individual qualitative observations based on the single-case specifics and then standardize these later. This is important for subsequent curricular work and feeds into the information base of the other members of the curricular work group.

Our own observations or conclusions from the previous experience of business experts or

technical experts as well are the starting point and centre of the occupational and activities analysis. We have suggested that our own observations and experience should be the point of departure before the economic and company structure (the determinants from the condition and decision fields) is examined further on the basis of the available material. This is done though at curricular problem points, i.e. selectively. In addition to our own experience and observations another major step is to discuss with European managers, engineers or master craftsmen working in the country. This is also a way of corroborating our own observations. Observations in the activity field can of course only provide a company-centred and often random vantage point, although a cross-section can be drawn from a series of observations.

Supplementing observation findings

So we have to supplement our observations and conclusions with analyses. We can draw on documents in emerging economies for this: national studies and publications, sector studies, statistical material, project appraisal and feasibility studies, development planning policy, regional and branch studies. You must assess their information value but the local experts can apply the necessary criteria thanks to their experience from the technical project. You know that national development plans, labour market figures, economic data, regional data, etc., have to be carefully evaluated. In our view, they should not take on a separate role in planning the occupational and activities analysis and should only be used for evaluation. They should be used to clear up doubts and corroborate statements on development trends. After analyzing the activity field the curricular work group (CWG) draws up a list of open questions to be answered by different members as allocated tasks and then evaluated and compiled in the CWG.

Systematizing the activities analysis

Now comes the concluding systematization step in the CWG. The business activities that are or could be important for the industrial-technical training course must be described (not broken down in too much detail). Here we link the connection points for business training in the industrial-technical project assessed in planning step 1 with business activity elements in working life identified in planning step 2. Let us illustrate this combination with an example. A study of the full-time school training course for joiners underscored the need for supplementary business training. In the timber warehouse the trainees learnt about the technical side of inventory and wood storage, using woodworking machines they learnt rational methods of woodworking and machining, they learnt how to pre-plan work for fabricating door frames for their own theory classrooms. Interfaces for imparting supplementary business knowledge were located in all these areas (efficient stockkeeping, low-cost production, efficient work pre-planning and design). The activities field analysis then confirmed the need for supplementary business training in this area, also from a practical point of view. Observations revealed uneconomic inventory, few low-cost modes of production, ad-hoc planning of work sequences, etc. The need for business training was found to be greater in foremen activities and especially for self-employed activities in this area. It was also found that supplementary business training was necessary up to the level of large-scale enterprise with its systematic division of labour. As however in the case in point the activity in this kind of enterprise was an exception, a look at the working relations gave clear confirmation of the need for supplementary business training.

Altogether, this phase showed that the industrial-technical and concomitant business sides are nearly always linked by frequent interfaces.

This applies above all for material procurement, stockkeeping, organization of production and repair operations, quality assurance, sales planning, cost controlling, costing and bookkeeping. In addition to this confirmation, the activities analysis served another purpose: it determined the level of activities and therefore pointed to what industrial-technical operations were particularly well suited to link up with business learning and the scope and level for this. This gives us major criteria to select and break down the general topics proposed by business didactics. It was also confirmed that business topics should not just lock in at interfaces, but that tasks and exercises should be geared in particular to specific occupations in training (trade-related).

3rd planning step: Qualifications analysis

We must now of course build a bridge between the job requirements described and the qualifications of the job holder. This planning step is taken inside the CWG (curricular work group). Qualification needs defining more closely.

Definition: By ***qualification*** we mean the sum of all knowledge, abilities and skills acquired by manpower or it must acquire to perform an occupational activity.

Job requirements qualifications

In this connection we must beware of drawing too direct and close a link between job requirements and qualifications. Otherwise we are in danger of making fictitious statements where tasks or routines are simply converted into qualifications by adding 'ability to...' or 'skill of...'. This explains nothing and gives us absurd statements like we need the skills to run a machine to run a machine.

We need to stress here that identifying work activities does not solve the problem of the requisite qualifications. Rather, we have to ask what knowledge, abilities and skills are needed to meet the activity requirements. What must I be able to do to meet the work requirements. Work activities in vocational training courses are a suitable approach but then we have to look behind the work requirements, so to speak. They are a kind of surface - the level of activity - hiding the qualification level which we must decipher. The key question is: 'What must the workers be able to do to perform the work tasks?' or from the training standpoint, 'What must the trainees learn to perform the later work tasks?' The qualifications behind the work activities are always more extensive than the work activity we see. This applies even for simple work. If after watching a stockist entering information into the inventory records we break down the work activity we see clearly how many different qualifications it entails: diligence, precision, motivation, skill, knowledge, control etc. Therefore we cannot logically infer qualifications from work activities (deduction); instead we must look backwards: what qualifications from a large cluster of qualifications can we usefully assign to a work activity or work context.

Observing work activities

Work activities are (only) an aid in this connection. That is why we must not take too narrow a view of the work activity but look at the broader activity context, as in stockkeeping for example, to assign qualifications. The observation of work activities should not be overdone in hindsight. It serves three main purposes:

1. Re-linking business qualification findings back to work activities (relevance to real life)

2. Locating the levels of these work activities (starting point for auricular work, which of course goes beyond this)

3. Identifying and outlining business work fields, but not drafting engineer type lists of work activities (grouping instead of separating)

Danger of planning to perfection

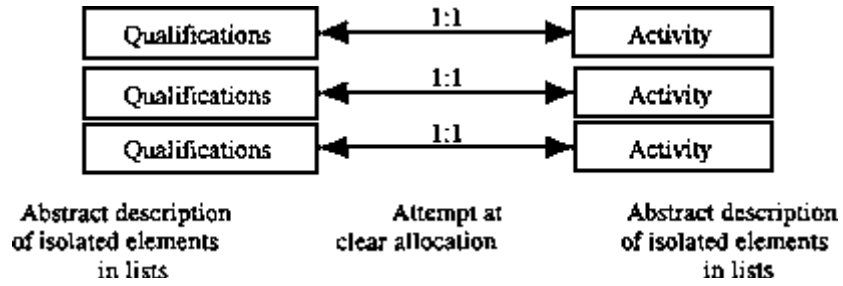
And here comes a very important point: in open-ended curriculum development, the CWG should not suddenly aim for perfection in planning. Despite all our good intentions, though, we will fall into this trap if we now start to analyze stockkeeping work activities with the precision of a time-and-motion study to find the qualifications. Identifying work activities in the planning phase 2 -occupational and activities analysis - had under conditions of curricular work in a vocational training project sensibly relied on qualitative observations and interviews. The only outcome could therefore be to identify the main intersection points for business activities in the setting of technical-craft work processes and determine their work level, which of course

also affects the learning level.

So we must assign qualifications to activity clusters (= jobs or work sequences) instead of individual activity elements.

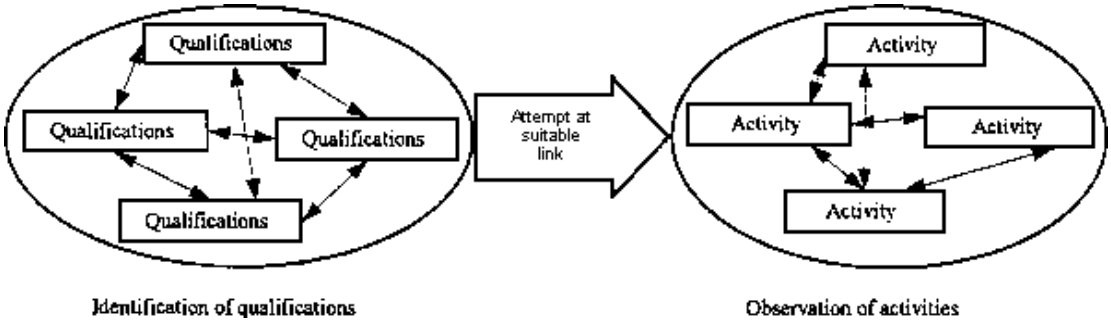
Figure 7: Assigning qualifications and activities

Not like this:



Figure

Like this:



Figure

It is a help here to concentrate on interface areas when deciding on assigning qualifications and sort these out (procurement, stockkeeping, production/repair, sales, management). We assign the qualifications to these areas and the work activities entailed (jobs, work sequences). From what box do we now take the qualifications? To give the procedure a structure and make it easier to follow it is best to order the different qualifications.

Qualification matrix

For this we use a qualification matrix consisting of core and peripheral zones. The core zone contains the job knowledge and skills which however are always derived from a broader context. So it is appropriate in learning processes to impart skills and knowledge pertaining to the whole of inventory management although in working practice (here: stockkeeping) only plain inventory index cards are used. The relevance to working reality and work level must however be preserved.

The core zone of job knowledge and skills is supplemented by organizational knowledge (here: stockkeeping and adjacent departments), such as information channels, other workplaces, other work areas with which the stockist has to cooperate closely, such as procurement.

From the analysis of the job and organizational knowledge we gain the major topic areas of the supplementary business curriculum for further curricular work (here: inventory management). They provide the basis for specialist training.

The job and work organization knowledge and skills are supplemented by three more qualification areas that are essential preconditions:

1. The qualification area **mental abilities,** such as the ability to analyze facts, planning ability, decision-making ability, ability to grasp relations, etc.

2. The qualification area **work qualities,** such as diligence, punctuality, precision, care, orderliness, etc.

3. The qualification area **attitudes to enterprise,** such as interest in the work, satisfaction, motivation, etc.

Specialist and social qualifications

The qualification areas of job and organizational knowledge and skills as well as mental abilities are specialist qualifications. Work qualities and attitudes to enterprise are social qualifications.

Figure 8: Qualification matrix

In qualifications for the supplementary business curriculum our initial concern is to draw up a very basic description of the abilities needed by qualified industrial-technical trainees to perform supplementary business tasks. They will be broken down in more detail later when specifying learning goals and topics. We shall now return to the model key question list from the activities analysis and give model answers to show what qualifications are needed for selected work tasks (how the allocation of qualifications might look).

Example from the key question list for activities analysis
Are production materials or finished products stored and what is the inventory system? (key question area 3)
Findings of the activities and work sequence analysis
Observations in a furniture makers revealed: restricted purchasing and sales stockrooms do exist and elementary inventory records are kept, but with gaps. No other records such as delivery receipts are kept nor are there even basic rules for inspecting incoming goods. There are no regulations on minimum and maximum inventory, etc. There is only a superficial link between stockkeeping, purchasing and sales.
Qualifications analysis
Job knowledge and skills: knowledge of merchandise, knowledge of inventory system, knowledge of how inventory index files work, booking incoming and outgoing merchandise, know the relationship between physical and bookkeeping inventory
Organizational knowledge: knowledge about location of stockroom in the company's operations sequence, knowledge of the role of stockkeeping for purchasing and sales, knowledge about ways of cooperating with procurement and sales
Mental abilities: Gain an overall picture of inventory processes, understand the interlink between procurement and inventory, analyze inventory levels and assess their importance
Work qualities: Precision when recording incoming and outgoing goods
Attitudes to enterprise: Interest in efficient stockkeeping

Empirical qualifications analysis
Normative qualifications analysis

So far, the qualifications analysis has been empirical. We assign qualifications to an observed work activity. So the qualifications are situated at the level we encounter. The level of stockkeeping activity in a cross-section of several micro and small enterprises might of course be higher, so we propose not switching from an empirical to a normative qualifications analysis (what qualifications are needed to perform a given work task better) until a cross-section has been made of the empirical qualification profiles. In emerging nations though we will in our training - and in the supplementary business training - be concerned with improving company practice by imparting higher qualifications to our trainees. This is why we must supplement the empirical qualifications analysis with normative qualifications analysis. That means we must think about what additional qualifications we must impart to our qualified trainees to improve stockkeeping in companies.

Surplus qualifications

It is however important to link empirical and normative qualifications analysis to keep in touch with working reality in an emerging nation and not just look down from the high normative ground of excellence to determine abstract qualification levels. This approach falls wide of the actual need for supplementary business training from the vantage point of the emerging nation and specific training courses and goals. We can call the normative qualification elements surplus qualifications for the development of a country, its enterprises and trainees.

Qualifications lead

We must account for changing trends in current requirements. Imparting surplus qualifications in industrial-technical projects as part of vocational training assistance for emerging economies is in fact standard, because a declared policy goal is to take industrial-technical abilities beyond the present level in the emerging nation. The activities analysis and empirical qualifications analysis ensure that the qualifications lead over the national standards is not over-large and that the reference point is the emerging nation and not the industrial country.

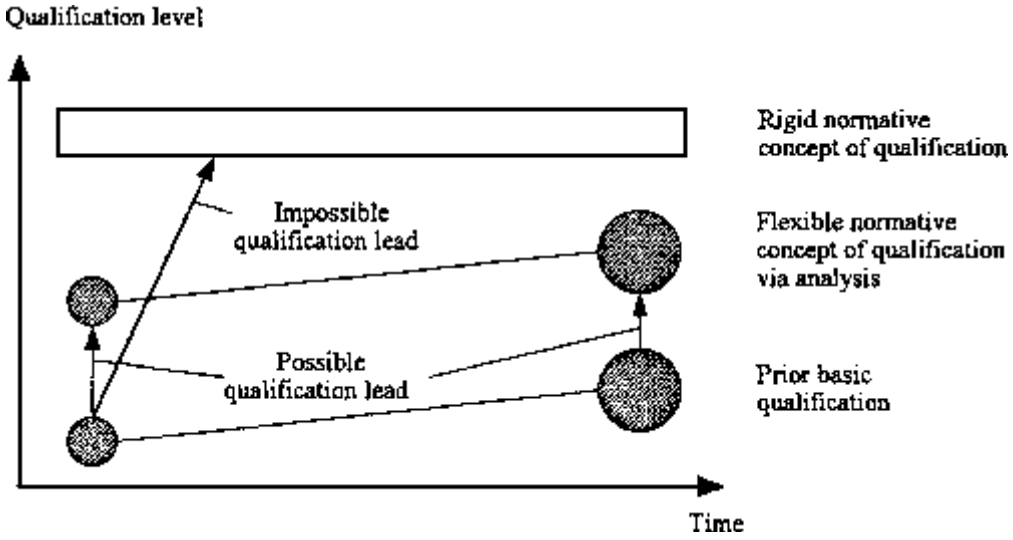


Figure 9: Normative and empirical notion of qualification

Whereas we in Germany assume that qualified trainees will be able to keep pace with technical advances in their working conditions thanks to surplus qualifications, qualified trainees from vocational training development projects are often faced with having to adapt in the reverse direction (as compared with the qualifications they have acquired) to less advanced working conditions (within certain temporary limits). This ability to adapt is crucial for the qualification potential of manpower.

At the end of the qualifications analysis the empirical qualification cross-sections must be collated with the normative definition of qualifications to obtain the necessary change in existing working conditions. For stockkeeping, we finally have a clear overhang in the normative qualification elements compared with the actual qualification, though we must keep these in proportion (otherwise we can simply choose a textbook, which would be of no practical use to the learners). Collating the two qualification elements in our stockkeeping example gives the following key knowledge areas:

- Organizing receipt and inspection of materials
- Recognizing link between type of good and stockkeeping technique
- Recording outgoing goods
- Introducing stock files
- Recording inventory changes and indicating reorder points

With this qualifications list, we then proceed to the next planning steps and break them down in more detail.

Though we shall not develop them in detail here, similar qualification lists result from the other areas of the work activities analysis.

1. Management
2. Procurement
3. Stockkeeping (as an example)
4. Production/service organisation
5. Sales

Qualification lists
Training modules

With this method we finally come to business training modules for technicians that centre on the five listed operative functions. Reading these qualification lists we see the need to supplement the function-oriented lists with interfunctional qualification lists. These stem from

the interfunctional qualification elements such as bookkeeping knowledge (needed amongst other things for inventory accounting, related here then to the function-tied qualification list for inventory), knowledge in pricing and costing, knowledge in finance and auditing, knowledge of legal provisions. Altogether we arrive at a set of 10 to 12 business training modules under our curricular conditions. They will need to be adapted more closely to the specific training conditions for technicians in business areas in a specific country and specific government approved trades, the closer we finally come to teaching and training planning in keeping with the curriculum.

4th planning step: Preconditions analysis

In the 4th planning step we look at the preconditions for supplementary business training stemming from organization of the industrial-technical training project and the prior education of the trainees.

Let us recall three principles:

1. The original project approach - to impart industrial-technical qualifications - must not be jeopardized.

2. Keep in mind that we are offering supplementary training as a flanking measure to improve employment prospects on the labour market for industrial-technical qualifications or in other occupational sectors.

3. Do not allow the business training, which is essentially a supplementary qualification, to become a self-sustaining separate project in the minds of the trainees, in the planning of the executing agency or project staff or in the teaching.

Organization of the industrial-technical project

The point of departure for thinking about instigating supplementary business training is the industrial-technical project and its training courses. We recall that close links exist in micro, small and medium-sized enterprises between the technical, administrative and market operations and there are accordingly suitable openings for supplementary business training. So we must examine our industrial-technical training courses to find out whether they are suitable as a 'peg' for supplementary business knowledge in procurement, sales, stockkeeping, production and services, etc. Here we come across distinctions largely stemming from the organization of the industrial-technical project (full-time vocational school with workshop training, full-time vocational school with workshop training and limited market links, vocational production school, basic vocational training for dressmakers, etc.). The organizational form decides on the openings for an integrated supplementary training. These are basically greater in a production school than in a 'normal' full-time vocational school.

Let us illustrate this with an example: If during training for electricians, motor-vehicle technicians, joiners, bricklayers in a full-time vocational school with workshop training after the first two years of a course-type occupational theory and practice training, products, technical and repair services are sold on the market or made use of in the school, we have got suitable interfaces for business training. Having the school rooms extended and renovated by the trainees in the third training year or car repairs in the school workshop for customers afford many interfaces to integrate business learning topics such as construction and repair costing, procurement and stocking of building materials and inventory costing, imputed costs, handling and planning orders, etc. Obviously, the relevance to production, market and activity particularly from a motivation standpoint makes sure the trainees see the practical utility of business topics and learn them.

Strong points of production school training

Production school training has a number of clear advantages:

• It is geared to procurement and sales.

• It is geared to prescribed national standards (technical, business, management).

• It is geared to activities in relation to work and learning objects?

• It adopts a holistic approach to technical, business and management activities.

• It is geared to a rational organization of work and marketing and provides criteria for selecting suitable activity blocs and topics.

• Work is linked to learning.

• The training fosters self-reliance in the trainees (elements of self-organization of work and learning).

• The production school is a model for later occupational activities and thus facilitates the transfer from learning to applied reality.

Project-type business training

We have listed the strong points to point to the basic principles governing supplementary business training - regardless of the organizational form of industrial-technical training. For all types of organizations we propose conducting the business training as a project. For this we need to establish the necessary organizational conditions for the industrial-technical training which is run as a course in theory and practice. These are project elements suitable for combination with the supplementary business training. The systematic imparting of business knowledge and patterns of activity should in turn be geared to this by having the systematic phases culminate in such a project. On the other hand, the search for suitable intersections for supplementary business training and its combination with the industrial-technical project should not be confined to productive or project-type training phases. All phases of the industrial-technical training should be examined to see if they can be combined with supplementary business training, including workshop and theory courses. (More on this in the planning phase: learning organization).

Role of government-approved occupations

The government-approved occupations (trades) also play a major role in the project. To be of practical use, the supplementary business training topics must link up with these. It is wrong for supplementary business knowledge to ignore the marked practical differences between an electrician costing the production of an electric cooker, a carpenter working out the costs of a roof and a motor-vehicle mechanic itemizing the costs of new brakes. Business training is making a serious error when it reverts to imparting a diluted, abstract costing system. Of course, the CWG must see whether certain basic business knowledge must be imparted in an inter-occupational course before specializing into occupations, but the basic point remains: the CWG must vet business training and its prospects in the project from an occupational standpoint. If it fails to do this, the opportunity for practical business training in tandem with technical training will be lost.

Trainer tasks

In this phase we also need to allocate clearly defined tasks to the trainers. The basic decisions taken in the organization of curricular work must be specified. The necessary platform for this has been built in the previously described preconditions analysis at curricular level (project possibilities). We can now estimate the overall need for supplementary training and in what areas we can start developing modules in line with the requirements in the industrial-technical training courses. This step is important to prevent business planning from going off on its own and lapsing into the traditional pattern of business course planning. Typical for this kind of planning attitude is to proceed from business decisions at management level and then turn to individual functional areas (procurement, stockkeeping, etc.).

In view of the different training courses, it is not easy to match up the different preconditions. One option is to locate the business training in the third year, draw on the acquired technical knowledge, couple it with business knowledge and prepare an integrated project. This basic decision makes sure the industrial-technical training course and its preconditions exert a formative influence on the curriculum. This also pre-shapes the work of the business experts, who in turn must allocate tasks in the team (e.g. a European businessman familiar with the country and two local teachers). The work assignment will of course depend on the abilities of the local teachers. We have found that the national standards of business training and methods play a major role in drafting the business curriculum. They pose almost insurmountable barriers (e.g. a kind of arrogance that clings to basic knowledge) and interventions must be continually made here. This holds for practically all planning up to the teaching stages. The most effective way to do this is for the industrial-technical project side to point out the very tangible interests of the project in supplementary business training.

Prior education of trainees

Lastly, we also need to assess the prior education of the trainees. A good general education is more conducive to grasping more abstract business topics which call a certain degree of imagination. Where the level of prior education is low, it is all the more important to gear business training to industrial-technical practice and conduct it in a straightforward way in line with the project.

5th planning step: Business didactics analysis

Business didactics as an aid
Danger of business

In planning step 5 the CWG turns to business didactics and its suggestions for designing business learning processes. It is natural for us to look for assistance here to perform our curricular task. Business didactics deals with the question of what business topics are important for business training and further training and how to arrange and present them for effective learning. What we have to answer for our technical-business curriculum project at the particular level it tries to answer at the more general level. However there are many kinds of business didactics. Amidst the (endless) range of options, we can pinpoint two criteria to help develop a supplementary business curriculum. First, you must assign business knowledge and activity patterns to a typical level of activity and second you must keep to the sequence we developed in the previous planning steps: scale of enterprise - industrial-technical training - interfaces between technical and business aspects - business activity requirements - business training topics. This will make sure that when we turn to business didactics and the underlying economic theory we are not overwhelmed by the broad array of major topics, otherwise the curricular decisions already made (planning steps 1-4) will be ineffective. This is why it is important to recall the findings in these phases: they are the reasoning behind the project requirements of business knowledge and activity patterns.

Specifics of business activity
Danger of abstraction
Levels of business activity

Now what in short does the CWG need to remember about the specifics of a business activity? Unlike physical production and repair, business activity is of its nature intangible. As it does not result in a tangible object (costs, efficiency, profit are symbols), there is a danger of business teaching getting stuck at a symbolic-abstract level, over-generalizing and losing touch with the real, tangible objects and work activities in the industrial-technical sector (costing with fictional figures for example instead of calculating the costs of manufacturing a product). Business training must therefore always link back to real processes. This is also necessitated by the basic nature of business activities: business activities is the abstract presentation of real activity sequences in material procurement, production, repair, stockkeeping, etc. by collecting and recording data, organizing, collating and interpreting data,

processing data to information, evaluating, working out alternatives and taking decisions. This process can be broken down into different levels of business activity structured bottom up. The levels of activity are important for ordering our curricular planning and as a selection yardstick for business knowledge: obviously our curricular project seldom encompasses all levels of activity.

1st level of activity: Business routines

This level pertains to recording, collecting, organizing and collating certain data. These are straightforward activities such as writing vouchers, orders, offers and bills, making entries into accounts, keeping inventory records, recording work times and calculating pay, etc. The output at this level is the indispensable basis for business activities at the next - planning and decision-making. Practice-centred training such as the dual business training in Germany usually starts at this level, but often fails to link up with business reality and the subsequent levels.

2nd level of activity: Ongoing business decisions

These are decisions closely connected to daily business routines, such as reminders, setting delivery dates for different customers, checking inventories and stocking. As these activities call for a basic knowledge of contractual law and mathematics to calculate the rate of inventory turnover, profit or loss on interest, much of this level is the subject of training theory (which in turn is conducted in training practice in schools in nearly all countries with no practical relevance and often divorced from the routines level).

3rd level of activity: Directing decisions

This level is where largely medium-term decisions are taken such as a company's general payment and delivery terms, payrolling, production lots of an article, choice of supplier, basic costing. This level is usually only imparted in training measures outside the practice-centred initial vocational training.

4th level of activity: Constitutive decisions

This level has to do with all questions of setting up a business and long-term management such as decisions on location, range of products, finance, outlay for fixed assets, personnel. This level is only dealt with in theory, but is often accorded inordinate importance in training partly because of the frequent abstract bias of academic business economics.

Matching up with the goals of industrial-technical training

Selecting suitable levels of activity

We now turn to selecting suitable levels of activity of later relevance for the qualified trainees of our technical-business curriculum and training projects. This is useful to reduce the circle of business knowledge and activity patterns. We also include the levels of industrial-technical work activities here to highlight the parallel relations between technical and business levels of activity for our target group.

Technical training usually starts at the level of basic technical skills (level of technical routines) to proceed in a subsequent step to specialist training for qualified skilled workers or craftsmen such as industrial mechanic, electronics technician or electrician (we call this the constructive-productive level). Then comes the training as foreman or master craftsman (= productive-planning level). This can be located at the constructive-productive level but is not a direct qualification goal. The same holds for the higher level of engineer (level of technical development). If we compare these intentions of technical training with the business level of activity we see that GTZ training projects with integrated supplementary business training are each situated at the lower two levels of activity.

The following figure will illustrate this:

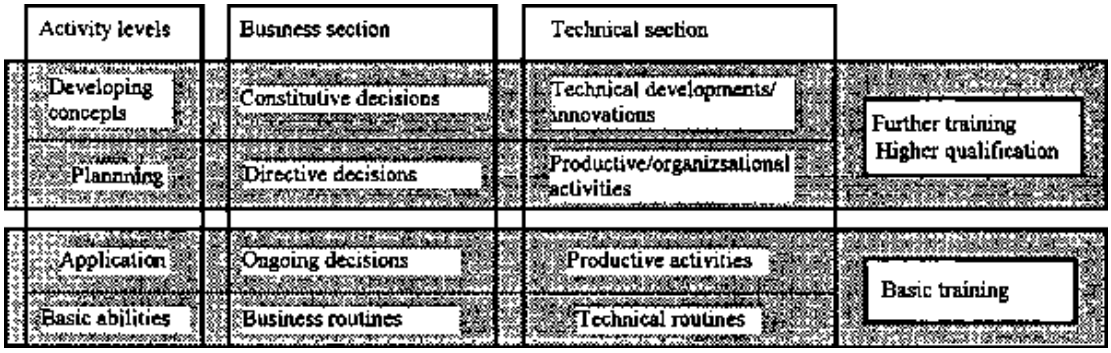


Figure 10: Parallel relationship of business and technical levels of activity

Activity process as training subject

This figure shows that it makes no sense for the technical project to stick to the level of individual skills (technical routines) and training modules in the supplementary business training for example to focus on imparting basic planning and decision-making ability in organizing the marketing of products and services. The supplementary business training usually addresses this level, however (ongoing business decisions). The intentions of the industrial-technical training must also coincide with this goal, i.e. impart planning and decision-making ability in technical situations (level of productive activities). Only when training takes as its subject an activity process, that is, a systematic sequence and connection of single industrial-technical activities, can we draw **a** meaningful curricular link between technical and business elements in training.

Scale of enterprise as reference point for selection decisions in business didactics

Role of scale of enterprise

Business didactics also points to a typical correlation between the role of the level of activity for the training and the scale of enterprise. We must bear in mind, though, that our target group must in part be enabled to enter self-employment after passing out in the form of a small or micro enterprise. So we should not lose sight of the level of constitutive decisions **as** a (secondary) perspective. It is more important, however, to impart basic knowledge of modes of work at the lower levels since these are prerequisites for running **a** business properly and securing its medium-term survival. This is also therefore our starting point for developing a supplementary business training module for technicians/craftsmen.

Beyond this basic decision we must again call to mind here the curricular decisions of the activities, qualifications and preconditions analyses and link these with business didactics issues (what activities and knowledge are important for the business sector by scale of enterprise). If we collate these findings we obtain the following matrix based on the previous curricular decisions (concentration on micro, small and medium-sized enterprises):

Scale of enterprise	Medium-sized enterprise	Small and micro enterprises
Goals of vocational training assistance	Enhancing or developing national competitiveness by promoting medium-sized business, especially in product quality and innovation, Raising market opportunities Economic stabilization of enterprises and market relations	Developing market structures by founding and extending businesses, Promoting product development, Systematising and enlarging production
Goals of technical training	Training and further training of skilled workers and master craftsmen largely activity fields and industrial areas important for national development and national industrial areas, Level: improvements geared to qualification levels and patterns as in the industrial nations	Training industrial-technical skilled manpower at appropriate level with pronounced regional accent
Major technical-business interfaces	Organization and administration combined with strategic production planning geared to procurement and sales markets	The entire management of the enterprise
Business activity requirements	Ability to organize and control the systematic recording of production data and help evaluate production, procurement and sales planning	Ability to set up a simple business administration to monitor finances, inventory, procurement and sales opportunities, negotiate procurement and sales and acquire and evaluate market information for product design and production development
Integration zone: Business training topics	Basic business organization and management, production data collection as part of production planning and procurement and sales organization, techniques of production development, quality assurance and maximizing production efficiency	Basic bookkeeping and financial planning, inventory, basic commercial correspondence, locational planning, production planning, cost control and costing, techniques of market surveillance and advertizing, basic contractual, employment and fiscal law

Knowledge items

Accounting for the completed curricular planning steps - in particular scale of enterprise and integrating technical and business training - the business didactics findings in combination with prior planning steps bring us to the conclusion that the business training modules for small and micro enterprises must centre on the following basic knowledge blocs:

- Basic bookkeeping
- Finance and financial planning
- Inventory and inventory planning
- Basic commercial correspondence
- Market surveillance and advertizing
- Production planning, product development, product improvement and quality assurance
- Locational planning

- Procurement and procurement planning
- Basic business organization and management
- Costing, pricing, calculation
- Basic contractual, employment and tax law

These are the knowledge blocs in business didactics that belong to the basic knowledge inventory. Their 'inner' design should not, however, be detached from the design criteria described in the curricular activities and qualifications analysis for a supplementary technical-business curriculum. This is the reference line to medium-sized, small and micro enterprises and the link between abstract business knowledge and activity patterns with real industrial-technical processes.

Construction faults when designing business training modules

For the internal shape of the training module business didactics proffer some more important pointers that are decisive for the effectiveness of learning business topics. Above all our business didactics is opposed to imparting highly abstract business knowledge (as is unfortunately usual in almost all countries under the influence of academic business economics. This applies in particular to emerging economies which emulate this 'theory syndrome' which is underpinned by business teachers who have usually only been trained in 'theory'). The CWG should therefore always account for the following business didactics principles when designing curricula and learning aids and constructing the business training module, because they are vital to the effectiveness and practical utility of the supplementary business training. You need to avoid the following construction faults when developing business training modules.

Fault 1: Gearing the topic routes to all kinds of lists

Terms as compressed knowledge
'Remobilizing' concepts/terms

Economic/business topics tend to ossify in concepts and terms and tread the same old paths. A job of learning, though, is to call the established system of terms and definitions into question and remobilize it. Terms/concepts are highly compressed knowledge, but we must ask what activities have shaped them or are included in them in compact form. The term 'internal finance' for example comprises a host of financial activities and decisions. So there is no point just detailing such terms in training modules and teaching: internal finance is broken down into equity finance and internal generation of funds, etc. etc. What, though, do we mean by remobilizing a rigid structure of ideas/terms? Let us imagine terms/concepts as compressed structural images of business activities that have come about or have 'grown' out of a chain of activities.

Rigid didactics

A useful metaphor is the passage of the seasons. In spring we sow, in summer the crops ripen and in autumn they are harvested. There is nothing wrong with ordering the harvest in the barns and making an inventory but when the harvest is continuously ordered and recorded in new lists/indices (classifications, checklists) all we are doing in this kind of business didactics is looking backwards and rummaging about in lists, our approach is stationary. We do not ask about the genesis of something, what activities brought it about, what it is for, what conditions have to be met for something to come into existence. Ordering concepts/terms is like sorting cans by shape and label, etc. How the contents got into the can, how it was processed, what it is for - these questions are not posed. This is what we are driving at with the image of a rigid didactics of autumn. Economic theory teaching follows this pattern in almost all countries and orders concepts/terms in classes, checklists, advantages and disadvantages, arbitrary interrelationships and tends to make distinctions beyond the

immediate teaching goal depending on what it has 'in stock'.

So we propose looking first at economic/business reality, activities, genesis and use and then at terms and concepts. The terminological/conceptual order is the outcome of reflection on economic/business operations, never the beginning. Economic/business theory should therefore not centre around terms and concepts.

Fault 2: Methodological window dressing

Faced with ossified topic structures, we reach here for the 'helping hand' of methodological presentation techniques to arouse the interest of the learners. We use interesting or amusing lead-ins to make the frugal fare of abstract concepts more appetizing. Improving topics must therefore go hand in hand with method skills. Otherwise we are just filling new bottles with old wine.

Example:

Wage negotiations are being simulated with role play. After half an hour, the teacher stops the game and explains what pay scales look like and how the role players fit into these.

The role play could however continue by asking the trainees to find differences between the role players and draft their own pay scales.

These could then be compared with the teacher's system.

Fault 3: Insufficient account of learners' experience

'Remobilizing' cognitive structures

As well as remobilizing the teaching topics we also have to 'break up' the cognitive structures of the learners. To overlook this is a serious fault because it is based on the misconception that we can teach the trainees the new information by simply 'overwriting' the existing (naive) structures in their minds like on a computer disk. It is not enough to proceed from a vague idea of learner experience. Rather, we have to get to know the learners' cognitive patterns while teaching and find out what images and screenplays colour the ways they already interpret economic/business processes. Only when we as teachers cater for these patterns will the trainees make learning progress which will also have a meaning to them.

In short: learning = experience + information.

Fault 4: Lack of economic/business expertise

If most of what a teacher/trainer knows about a subject is to follow the topic routes in the school text books, he/she will not be able to do much more than slavishly obey the curricular instructions and rigid patterns in the learning aids. Only when we have a clear picture of the subject can we ask the right questions. For example: Why does the standard approach to 'customs duties' confine itself to a definition (fiscal charges on imported or exported merchandise), classifying types of duty and perhaps compiling the documents to be submitted to the customs office? Does this help us to understand how domestic markets come about, do we grasp why and when customs duties came to be levied in all the different nations and the general social and political models they are based on? Do we appreciate the countless difficulties and distortions involved in reforming or abolishing the international customs system? If you feel these questions overstep the mark, you are forgetting that every subject gives rise to countless topics. No curriculum obliges us to reduce customs duties to a set of definitions and categories!

So we advise the readers of our guide to think about the economic conditions and practice in their country so as to lay the foundation for sound, realistic teaching.

Recap

The CWG must return to these business didactics pointers for developing learning organization - topics and method. The curricular planning so far is pointless if the CWG makes the same construction errors when developing individual modules and builds an abstract prefabricated European house. Our job is not to assemble imported, highly specialized ready-made components; we have to find, process and shape local building materials and build a house with a national architecture. The craftsman needs suitable materials and tools for this and the businessman national information and forms (job time cards, inventory record cards, settlement sheets, accounts...). We have to make sure these are suitable.

6th planning step: Goal and learning goal analysis

Planning principles

Decision fields

At this point the CWG enters the (three) decision fields of curriculum development. It now has a pattern sheet with sharp enough contours to cut out the basic curriculum pattern. CWG proceeds from the rough topics developed, supplements them if necessary as it goes along and assigns to them learning goals to determine the level of learning processes. For this it draws on the findings of the business didactics analysis.

In this planning step remember not to detach the rough learning goals and rough topics from the order established so far. It would be a great step backwards for us simply to sort through the supplementary business training areas and allocate learning goals to them, think up a system that proceeds from the enterprise to the departments and workplaces and their work activities. In the curricular planning steps so far we have adopted another organizational pattern, that we have to account for here. When developing rough learning goals and topics we must recollect three sets of facts that form the decision-making parameters for subsequent development steps. The three determinants of our rough planning are:

Determinant 1: is the curricular goal, 'Making business plans and decisions in industrial-technical work situations'. This obliges us to determine more precisely the kind and scope of business topics in relation to technical training.

Determinant 2: is the scale of enterprise - medium-sized, small and micro enterprise (see planning step 5: Scale of enterprise as reference point for business didactics selection decisions). Here we had pinpointed the key business blocs for a curriculum:

- Basic bookkeeping
- Finance and financial planning
- Inventory and inventory planning
- Basic commercial correspondence
- Market surveillance and advertizing
- Production planning, product development, product improvement and quality assurance
- Locational planning
- Procurement and procurement planning
- Basic business organization and management

- Costing, pricing, calculation

- Basic contractual, employment and tax law

Levels of activity 'routines' and 'ongoing decisions'

Determinant 3: are the levels of activity - (a) the business routines and (b) ongoing business decisions. This is where we determine the level of learning processes. We had also established that the level of activity of the directing and constitutive (structural) decisions for supplementary business curricula do not play a significant role in our framework, but that some elements need to be extracted so to speak to support micro enterprise startups. Basically this can be done by supplementing the levels of activity 'routines' and 'ongoing decisions' in the modules.

These two levels of activity mean for our training module that the CWG goes through two runs in the above topic fields, the first at the routines level, the second at the ongoing decisions level. This is why there are usually two modules (or several depending on the scope of the supplementary business training): the module 'booking' at level 1 and 2, distinguished by the level of learning goals. This gives us an adaptable modular system that can respond differently to different target groups.

Learning goal decisions

Danger of 'learning goal tinkering'

Here are some points on the learning goal decisions the CWG now has to make. Learning goals are statements on the level of learning process we are aiming at. They link topics with learning achievements. Should the trainees simply know about inventory or should they be able to plan it? This makes a difference of course and calls for organizing curriculum learning processes with different key topics at different learning levels. So wording learning goals is not just playing about. On the other hand, there is no area in curricular discussion where the 'curriculum experts' have been as zealous as in their search for suitable learning goal formulas. This has resulted in a goal obsession in curriculum development (learning goal tinkering). We should not, however, flush out the baby with the bathwater. They are and remain important prior information on what awaits the learners. They are landmarks but they forfeit this function if we define too few or too many. We need to find the right measure. Learning goals are also major signposts for the learning aids developer and for assigning topics and tests.

When organizing learning processes in the occupational area we need to keep an eye on the link with occupational activities to avoid developing abstract learning goal systems measured against some criteria of completeness. When defining learning goals the CWG should keep to the basic qualification areas demarcated in the qualifications analysis. This will (1.) make plain that learning goals are intended qualifications and (2.) link up with occupational activity fields. We can order this as follows:

Work role and sectors	Requirements	Qualifications	Learning goal area	Learning goal level
Functional	Workplace	know	Cognitive	Level 1
		execute	psychomotor	No level
	Work organization	know	Cognitive	Level 1
		compare		Level 2
		assess		Level 3
Extra functional	Mental occupational potential	compare	Cognitive	Level 2
		assess		Level 3
		analyze		Level 4
		plan		Level 5
		judge		Level 6
		decide		Level 7
	Work qualities	diligence	Affective	No level
		punctuality		
		precision		
		sense of order		
	Attitudes	Work interest	Affective	No level

Affective learning goal area

This of course is not a perfect model, but no system like this is an end in itself. This model does what it is supposed to do in developing a business curriculum: to link business work requirements and the requisite qualification and learning achievements. For business requirements (unlike technical ones) it makes no sense to work with a deeper skill hierarchy (filing, booking, recording, etc. do not pose special skill requirements, so lets keep to one level. That is enough.). We would be tinkering with learning goals if we broke down the affective learning goal area any further. Let us stick to the everyday meaning of the notions such as diligence, motivation, etc. We are not trying to find out whether the work qualities are supposed to be imitated, internalized or accepted in learning to define related graded affective learning goals. This far exceeds the scope of a supplementary business curriculum. This calls for organizing far longer learning processes. Let us pay attention to precise and reliable bookkeeping, let us foster work motivation when teaching - without overstretching supplementary business curriculum in this area.

Cognitive learning goal area

It only makes sense to make a detailed breakdown in the cognitive learning goal area, because this is where the main area of business qualifications is located. We have used everyday language and avoided complex terminology like reproduction, reorganization, transfer, etc. The advantage of this is that a learning goal like 'compare your own price with competitors' is always easy to understand. Another advantage is that we can save the trouble of translating terms like transfer, etc. The CWG is however free to extend the list of learning goals but beware of 'overloading'.

Framework curriculum for supplementary business training

Rough learning goals and rough topic structure of business training module

With the tools developed, the CWG can now define the rough learning goals for the training modules. It is important here to collate the technical reference point (as far as possible) with the business learning goals and the corresponding topic blocs. (We no longer give reasons for where the learning goals fit into our matrix but of course keep to the wording and assignments proposed there.). The CWG must now organize the work steps in the following way; the modules may need to be altered slightly or supplemented.

	Run 1: Module with focus on business routines level	**Run 2: Module with focus on ongoing decisions level**
	Module 1.1 Basic costing and planning	**Module 1.2** **Preliminary costing**
Reference point	Technical drawing and parts lists	Technical drawing and parts lists
Rough business learning goals:	The trainees should know and assess quantities (material input: individual materials, ancillary and operating supplies) based on planned output/repair and enter these in a systematic list	Based on a new product, the technical drawing and parts list and in consultation with the trainer, the trainees should jointly plan a systematic cost estimate sheet, fill it out and judge it.
Rough topics	Parts list (quantities), product parts, number/quantity per unit, planned output, total requirements	Preliminary costing of material requirements (quantity cost structure)
	Module 2.1. **Procurement planning**	**Module 2.2** **Procurement planning/vendor card file**
Reference point	Materials technology and technical-qualitative product requirements	Materials technology and technical-qualitative product requirements
Rough business learning goals:	The trainees should know and compare customary procurement sources and be able to draw up a list of alternative suppliers (delivery times, quality, prices, terms of payment)	Based on the information obtained in Module 2.1, the trainees should draw up a vendor card file, assess other supply sources and extend the file. They should judge supply options based on the file.
Rough topic	List of suppliers	Vendor card file and decision on supplier; decision criteria such as: • Availability of material • Quality • Price • Transport facilities
	Module 3.1 **Financial planning**	**Module 3.2** **Finance**
Reference point.	./.	./.
Rough business learning goals	The trainees should know and compare finance requirements for procurement or instalments and compare possible sources of finance (e.g. judge the necessary advance payment by the customer)	Beyond the local types of finance (cash), the trainees should know and assess kinds of finance (current account, loan, bill of exchange, etc.). They should also combine basic legal aspects with these (lending law, securities, formal provisions, etc.)
Rough topics	List of sources of finance	Types of finance - decision on finance Decision criteria such as: • Interest • Term • Securities
	Module 4.1 **Purchasing**	**Module 4.2** **Purchasing**
Reference point:	Materials technology, parts lists	Material technology, parts lists
Rough business learning goals	The trainees should be able to plan a simple order form with the main order data (quantity, prices, quality...) and handle the order	Know basic law of contracts and judge and handle non-performance problems (delay in delivery, quality defects, etc.)
Rough topic	Order form	Purchase terms and conditions (legal side); buying order list
	Module 5.1 **Stockkeeping**	**Module 5.2** **Stockkeeping**
Reference point:	Material technology, stockkeeping techniques	Material technology, stockkeeping techniques
Rough business learning goals	The trainees should judge stockkeeping requirements in relation to the good (e.g. wood), plan inventory needs and keep inventory records for individual material and goods categories	The trainees should know and apply organizational principles of stockkeeping e.g. incoming merchandise quality inspection, delivery receipts (quantity discrepancies), inventory status reports, removal from books with material orders, inventory

	Run 1: Module with focus on business routines level	**Run 2: Module with focus on ongoing decisions level**
Rough topic	Inventory records	Physical inventory/reorder point; inventory audit; decision on ordering
	Module 6.1 **Booking**	**Module 6.2** **Booking**
Reference point	./.	./.
Rough business learning goals	The trainees should know the first accounts (inpayments, outpayments, inventory) and book payments to date	The trainees should judge the functions of other (project-tied) accounts, such as liabilities, receivables, cash, fixed assets, rents, energy costs and open and make entries in accounts. The accounts should be closed and a profit and loss statement prepared.
Rough topics	Lists of inpayments/outpayments/cash	Breakdown of lists in accounts/booking/closure; drafting a financial plan for following month; where usual and necessary, the topic of taxation can be dealt with.
	Module 7.1 **Production/repair times and materials usage**	**Module 7.2** **Recording production process, repair planning, production/repair times and material usage**
Reference point	Production process, repair	Production process/repair
Rough business learning goals	The trainees should draw up time cards and record and analyze the effective working hours/unit and time off	The trainees should assess and judge the possibilities for division of labour, plan a production sequence, assess how to record times for individual work steps and record material usage.
Rough topics	Production records, time card (time record), materials record (materials order)	Production schedule (planning labour input, availability of materials)
	Module 8.1 **Production costs and pricing**	**Module 8.2** **Production costs and pricing**
Reference point	Product/repair	Product and production process/repair and repair process
Rough business learning goals	Based on the data acquired in the modules so far, the trainees should plan a simple cost estimate sheet and specify the production price of their product or repair job. The trainees should enter a profit mark-up and set a final price.	Based on Modules 7.2 and 6.2, the trainees should draw up a complex cost estimate sheet to include all costs of production and repair. Based on experience (Module 9.1.) they should specify the profit mark-up/wages of management with reasons.
Rough topics	Cost estimate sheet based on cost categories (material, labour, ancillary supplies)	Enlarging the cost estimate sheet with indirect costs such as depreciation, rent, energy; decision on planned sales price, repair price
	Module 9.1 **Marketing and efficiency review**	**Module 9.2** **Marketing and efficiency review**
Reference point	Product	Product
Rough business learning goals	The trainees should find out local sales points and be able to determine prices of comparable products. They should compare their sales price with other market prices, judge these and decide on a final price.	The trainees should know marketing strategies (incl. forms of cooperation in tapping markets) and know and judge ways of pricing and designing products. They should also know the options under the law of contracts and handle non-performance problems. (Module 4.2.)
Rough topics	Sales list, catalogue	Market strategies, sales channels, customer records; decision on sales terms according to criteria such as: • Price • Mode of payment • Transport and delivery

We now have a framework that needs detailing and breaking down into a learning organization plan.

7th planning step: Learning organization

Learning organization tasks

In this planning step the CWG has three jobs to do:

1. Decide how to organize the business training in connection with the technical training

2. Decide how to give detailed shape to the goals and topics specified in the module system (training plan)

3. Direct the training and teaching process by developing learning aids

What is the thinking behind learning organization?

With the rough learning goals and rough topics we now have an outline of the planned supplementary business curriculum. It is roughly synchronized with the industrial-technical training. Now the CWG has to decide on learning organization (fitting the business training modules into the learning organization of industrial-technical training) and at topic level move on from a rough analysis to a detailed analysis: definition of detailed learning goals and detailing of learning topics. We progress from the rough analysis a detailed analysis.

Linking training modules

The design of the individual business topic blocs was already modular at the rough curriculum planning level. Training module linkage is based on a three-pronged principle:

1. Running through at two or more levels that contain similar topics but differ in terms of difficulty. This caters for the routines level of activity and the ongoing business decisions level.

2. A process-type structure. This of course means that the technical training also involves an activity process, i.e. a systematic sequence of single technical activities, at least at some point. This can be a production or repair job. This is an appropriate point to introduce the supplementary business training with its process-type structure.

3. The implementation of the supplementary business curriculum must be closely synchronized with the technical training sequence.

This rules out other learning organizational decisions such as the combination of two levels of difficulty in one module (combining the 1st and 2nd levels of activity) or proceeding from an overall view of the enterprise to its individual functions and workplaces. There are good reasons for proposing this kind of learning organization.

Reference points for business training in the industrial-technical training course

The business training module should link in with a sequence of production or a technical service. Of course, something is produced or repaired on order. Since however technical training and its learning organization must be treated as given and the necessary technical knowledge and skills for producing a product or providing a repair service must be imparted beforehand, at the start of the supplementary business training we leave aside for learning organizational reasons the relatively abstract task of soliciting an order and assume that the order has been placed. So our supplementary business training locks in parallel to the technical process of production pre-planning or planning for a technical service. The technical reference point for the first business training step therefore is the technical drawing and the parts list.

At this intersection and in the following training steps we remain at the business routines level. Proceeding from basic costing (quantity planning), we then look at procurement and stockkeeping and booking these procedures, production scheduling and sales preplanning. The 2nd run is more concerned with decision-making in business situations (level of activity of ongoing decisions). Here too, the connection to the technical project should be close in terms of topics and time, but now the activity outcome of the 1st run is reviewed, supplemented, evaluated and extended with business background knowledge.

The business training module

The module sequences can be depicted as follows:

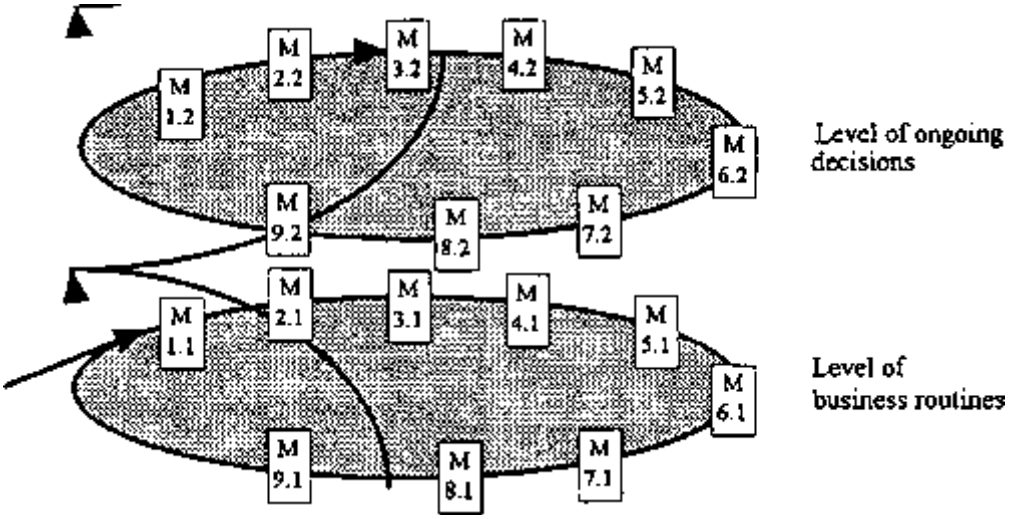


Figure 11: **Flowchart of business modules**

Internal structure of modules

Basic learning organizational structure of training modules

Using a module we shall briefly illustrate basic learning organizational structures: in this architecture each module (rough structure) always centres on a rough topic that is broken down in more detail in the different runs. For example, Module 1 centres on 'costing'. In the first run Sub-module 1.1. comes into play. Under guidance the trainees are supposed to cost material quantities and classify these in a system. In the second run Module 1.2. is applied. Here the trainees have to deal with material quantities on their own. In addition they must valuate and then pre-cost the quantities. The second run then deals with a more complex activity; at the same time the rough topic of the first run is taken up again. So the knowledge from the first run is repeated, refreshed and competence is enlarged through the evaluation.

The role of the modular sequence

The training module profiles and their sequence furnishes the CWG with an 'ideal' plan. When the CWG now proceeds to detail the learning organization, certain changes may prove necessary: e.g. leapfrogging individual modules or switching levels. The 'master plan' retains its guiding role, because it helps to gauge the coherence of our own planning. The 'master plan' will not solve all planning problems, but it is a way of assessing and guiding our own planning.

Decisions on learning organization

Decision on timespan for business training

The CWG must first agree on the timespan of the business training. Many factors affect this

decision: goals and scope of business training, extent of technical training, learning level of trainees, qualification of available teachers, willingness of businessmen and technicians to cooperate. These factors are often bound up with definite interests which mean that decisions are frequently taken on planning problems to safeguard personal or group advantages and not for curricular reasons. If the business training programme has to be limited for lack of time, it is best to retain the coherence of a run-through at one level at least (Run 1) while adding some more advanced modules from the Run 2 level. This will preserve the functional coherence of business activities with each other and with the technical side as envisaged in the modular schedule. Clearly, precedence should be accorded a genuine integration of technical and business training. This implies that the supplementary business project really does enter the picture when the technical training departs from the level of imparting technical routines and begins imparting productive activities - as proposed. That means that the supplementary business training intersects where the trainees can manufacture products or carry out extensive repair work.

This gives us a schedule over a lengthy training phase that begins at a later point in the technical training. Another option would be to insert a project phase into the technical training. In this case, however, we must make sure that the production or repair does not simply proceed in line with the technical logic and the business training is felt as a disruption. This is why it is important that planning in the technical sector from material procurement, to preliminary costing, scheduling, work organization, billing, sales, etc. is always extended to include the business side. We must ensure that the learners repeatedly step back from the activity and reflect (e.g. via teaching) to gain a clear picture of the scope of their activities and their economic value. The worst case option is simply to draw a theoretical link to the industrial-technical side of the training (parts lists for example) and then impart supplementary business knowledge in a compact teaching course at the end.

The training plan and developing detailed learning goals

Developing a training plan

Now it is important for the CWG to develop a training plan for the supplementary business training based on the master plan. This training plan must detail the modules (detailed goals and detailed topics).

For this, the CWG must proceed from the rough learning goals and rough topics of the framework training plan, like the ones in Module 8.1.

Module 8.1	**Production costs and pricing**
Reference point	Product/repair
Rough business learning goals	Based on the data acquired in the modules so far, the trainees should plan a simple cost estimate sheet and specify the production price of their product or repair job. The trainees should enter a profit mark-up and set a final price.
Rough topics	Cost estimate sheet based on cost categories (material, labour, ancillary supplies)

Let us assume after detailing we have a training module in the training plan with the following detailed structure:

Detailed learning goals	Detailed topics
Know the costing system and its elements	Costing system Explanation of basic concepts and their systematic interconnection
Know, apply and judge preliminary costing methods	Preliminary costing Direct and indirect costs Cost estimate sheet
Know, apply and judge methods of profit calculation	Profit calculation Link with preliminary costing Profit terms and cost estimate sheet
Know, apply and judge methods of estimating sales	Sales estimate Checking costing data
Know and apply additional calculation aspects	Additional calculation aspects • Pricing strategies • Compensatory pricing • Pricing policy • Demand, supply and price curves • Break-even point
Judge the cost and price of a product	Practical example: producing and costing an electric cooker

All modules can be broken down like this. We need, though, to make some critical remarks on the way rough planning has been detailed here (these comments are intended to spotlight the requirements stemming from the curricular preparation and calling for changes to module structure):

The module must centre around the chapter pre-costing, profit calculation and sales estimates. It is helpful in this module to start with preliminary costing, because it entails refreshing concepts already dealt with such as material and labour costs. This should be followed by the section on cost estimate sheets, because this involves a review of the practical calculation activities (pre-costing, profit calculation and sales estimates). The additional calculation aspects brought in at the end of this module are not all necessary. Supply, demand and market price curves and break-even point analysis are too abstract and superfluous for deciding on a suitable price for a product on the local/regional market, so leave them out.

Example of project design in practice

Producing and marketing an electric cooker furnishes us with an excellent example for practical project design and gives us a real-life opportunity to examine the practical effects of technical and business activities in context as exemplified by the comparison of competitor products on the local market using price analysis. There must be openings here for checking own pricing and product design or devising a marketing strategy. Altogether in view of the short time available for supplementary business training there should be a concentration on training areas where the trainees can draw on experience when learning and as much abstract ballast as possible is thrown overboard as this is not warranted by the curricular analysis anyway and usually reflects the dictates of own earlier training.

Reviewing the learning goal structure

For this reason we must take another critical look at the learning goal structure contained in the 'detailed module'. The important thing about this module is that the trainees learn the following:

1. The price of a product depends on the costs in the production process such as materials quantities, qualities, job time

2. The different cost categories can be more or less influenced by 'business decisions' (inventory at low purchase prices, at high inflation rates/by good organization to cut labour

costs/by altering output, etc.)

3. The 'internal' pricing (costing) must be measured against 'external' pricing (product and price comparison on the local market). Here too the businessman must decide whether to produce more, what profit margin to aim for, whether he can charge the price with the help of advertizing, whether he can alter his costs by using cheaper production inputs, trading off lower quality....

It must be plain to see that these considerations are crucial to defining learning goals and will thus have a lasting formative effect on the training plan and bear fruit in problem-centred teaching. Our advice to the CWG is: reappraise the given module structure at the detailed learning goal level and select another sequence of topics.

Developing learning aids

Preparing a learning and work book

For the curricular plan it has developed so far to have a lasting effect, the CWG must now proceed to developing learning aids (however much work this may entail). Considering its capabilities, the CWG must give some thought to the quantity of learning aids to develop. The prime task is to prepare learning and work books for the trainees, the learning book to contain the topics to the modules, the work book the tasks to the individual modules that the trainees should perform. It is essential to tailor the books to individual occupations. It makes no sense for dressmakers to calculate the costs for an electric cooker and not the costs of producing a coat. This occupational relevance makes a big difference to the effectiveness of business training. Unfortunately this tie is often underestimated because it is customary in business training to use abstract figures (that are easy to calculate) and abstract people (Mrs Busy, Mr X). The learners soon get fed up with this.

So: when explaining cost categories, costing and in all practical tasks we must account for the specifics of the individual occupations. Otherwise we are in danger of losing touch with the real demands of the industrial-technical training project. The whole point of the curriculum construction chosen here will be lost if the supplementary business training fails to meet its obligations as a practically effective training by stealing away into abstractions (general cost estimate sheet, general description of costs and prices).

Developing a teacher handbook

A second major task is to develop a teacher handbook to point out the intentions of the supplementary business curriculum to teachers outside the CWG and give them pointers on how to put it into practice. The teacher handbook should contain the following:

- Intentions and goals of the supplementary business training
- Pointers to the trainees' learning and work books
- Module survey
- Demands on teaching staff
- Pointers for using the learning and work books bearing on the individual training modules
- Help on the individual modules (goals, using the learning and work books, method and media for putting the module into teaching practice)
- Pointers on testing learning achievement

The CWG will not be able to get all this work done before beginning the supplementary business training, but it is important to draw parameters for identifying the first major work steps and then decide what tasks can be performed before or during the ongoing training. It is

however crucial that developing learning aids is recognized as a key task for supplementary business training activities in keeping with target-group needs and conditions, didactic specifications and special occupations.

8th planning step: Training and teaching planning

Preparation of teachers and trainers

The individual teacher must plan his/her training and teaching based on the training plan and the learning and work books. This is a basic feature of open-ended curriculum development. So we are not aiming here at developing a closed concept of teaching planning, but pointers based on the curricular design of supplementary business training. Given the specifics of an integrated technical-business training, teaching planning is about making sure that the curricular plan is implemented without tying the teacher's hands. However, the structure of the concept (see teacher handbook) requires that at least in the first runs, the teacher needs close guidance. Under this precondition the preparation of the teacher and trainer plays a major role. This also holds for the technicians in the projects (expert and local teacher and trainer). It is always help when the key persons in curriculum implementation are also members of the CWG. The CWG should therefore give thought to how to instruct the teachers for the business sector and what pointers should be given in the teacher handbook. The CWG must reach agreement on this. The learning material compiled is key to ensure that planning intentions are achieved.

The pointers on training and teaching planning should cover the following areas:

- Trainer, trainees
- Didactics
- Method
- Media

Trainer/teacher

It is important to convey to the trainers/teachers (not in the CWG) that they are not there to run a (abstract) management training course in this project and to 'lecture', that the teaching is not an end in itself, that it is supposed to provide the trainees with practical tools to deal with difficult occupational situations.

So trainers/teachers must adopt different roles in their teaching and combine these:

Teacher as knowledge mediator

For one thing teachers convey knowledge, but the CWG has 'taken over' part of this task by developing the teaching and learning aids. Major information and tasks on the training modules are available in printed form, so the teacher should focus on the practical tasks (studying the timber storehouse in a production school or carpenter's workshop from an economic/business standpoint) and provide supplementary information. The teachers mediate information around the practical tasks. They must prepare these to enable the trainees to observe in a purposive way, to support them with information in performing the task and round off the options prepared with additional information. At this level, though, the teacher will continue to play quite a central role and there is nothing wrong with this provided the teacher is conscientious in providing the trainees with further information, which must however remain purposive and not abstract and theoretical.

Teacher as organizer

As well as knowledge mediator the teacher also plays the role of organizer in problem-solving learning processes. In this role we spotlight learning organization as a teaching task. Here he/she must look for interesting lead-ins for learning and also give practical assistance in solving problems: help trainees with key questions on stockkeeping problems for example.

He/she cannot do this with lectures full of information. Instead, he/she must give the trainees the opportunity to gain practical experience or cope with a problem and find a solution, but he/she must also guide them in the process (so no group exercises while the teacher reads the newspaper) by 'taking part' at the subject matter level by suggesting productive options or leading the trainees out of blind alleys.

Teacher as moderator

On top of providing information and organizing learning processes comes the role of 'pure' moderator. In this role the trainer now keeps out of the ongoing learning process at topic level. He/she lets the trainees work independently in groups and moderates the results. This method will always be used when trainees conduct a project such as manufacturing an electric cooker with costing and pricing - now able to work on their own thanks to the previous learning processes. While the first two roles are played throughout the entire learning process with different degrees of intensity, the moderator is limited to phases and results.

The teacher's training (by the CWG's business expert or teachers already in the CWG) should not be confined to conveying information; the teacher must be prepared with practical exercises (micro teaching for example).

Didactics

This is about subject matter, the topics. They are largely covered in the training module material. They are geared to business practice and tied to activities not concepts (no 'autumn' didactics) and should be used as tools to solve business problems. They should always be linked with the technical training in the project and the local market. The linkup with the technical project calls for cooperation with the technical trainers, but also at subject level, obtaining payroll cards from the motor vehicle workshop to calculate labour costs for a repair job, for example. There are also broader issues of cooperation to settle with the industrial-technical project: we need to match up the practical and theoretical industrial-technical training to draw the link to (theoretical) business teaching, the practical business training phases (e.g. market surveys) and combine technical and business training in a joint project (manufacturing a product/providing a technical service and marketing these).

Method

Alongside imparting knowledge, the training methods should aim at conveying the importance of business work and fostering self-reliance in the trainees. For this reason the lecture and teacher-centred teaching should be supplemented as much as possible by guided research tasks on own workshops or the local market situation. In our own training course it is a help when the trainers from the technical side can be involved in the business training programme. We can also set small group tasks to apply and consolidate the knowledge acquired. It is also very useful to invite practicians to take part in the business teaching. They can help provide a motivating lead-in to the training module, provide examples and link up with applied practice. In any case: the basic method is to advance from guided to autonomous learning.

Of great importance in method is defining activity goals to access the training modules. When at the beginning we define an activity goal ('I have to make an electric cooker, so I need a hot plate, electrical components') we bring in topics such as procurement with quantity planning, costing, supply sources), which have considerable implications for teaching method. A basic operation is thus extended to a systematic activity in major business sub-areas. This gives basic shape to teaching method, which proceeds from the activity to the product and from practice to theory.

Of equal importance for method is that the teaching and course culminate in an activity outcome that lends coherence to the whole. For this we need a task that spans individual training modules. For example, the individual training modules can be seen as contributions to setting up a micro enterprise (feasibility study). This would mean enlarging the activity goal such as producing an electric cooker with the necessary purpose-tied activities to encompass a (realistic) directive dimension. So the teaching is not just concerned with the successful

activity (cooker is being and has been produced); but also with discussing activity options (price alternatives, production options, cost cutting, reorganization of work...).

Media

The media used in teaching are not just there to illustrate. They are not just there to help the teacher. Rather, the worksheets/forms should be designed for later use in subsequent everyday work. Their practice-centred design should be a structural teaching element. They should be explained or developed further in discussions with the teacher and filed along with commentaries/notes in a work folder. This work folder should be used like a toolbox.

Recap

The CWG must place stress on teacher/trainer preparation. Curriculum information is essential here. It is also important to know the goals, topics and teaching methods and media. All this together can be combined in exercises. We can either conduct and discuss trial lessons or train behaviour under the simplified conditions of micro teaching. Also key is the link to the technical projects and the interface openings. Unlike a pure business project, we need to organize an intensive phase of establishing contact with the technical side and sounding out possibilities. This is the only way to ensure a sound basic structure for the supplementary curriculum.

9th planning step: Curriculum evaluation

After getting through eight out of nine planning steps, the CWG is usually exhausted and often neglects the last planning step -evaluating and revising the curriculum. In fact, though, the most interesting question is the impact of the curricular work on training practice, the trainers and trainees. We need to adopt a candid, curious attitude and not simply dismiss criticism. This is where we find out whether the lengthy preparations in the 'CWG laboratory' have aroused learner interest and induced the trainers to make their teaching more interesting. However, the CWG must make a realistic assessment of their capabilities for reviewing the curriculum and the resultant business training practice. It is a matter of time, money and staff, but evaluating the curriculum is vital for curriculum development and revision and must be accorded due importance.

Considering the conditions for a comparatively small and short supplementary project such as business training for technicians and craftsmen the best way to evaluate it is with a kind of activity research approach. This is a special form of evaluation: the findings should be promptly rechannelled into ongoing curriculum development and further development. This is a suitable approach for the supplementary business curriculum. It also ensures that the curriculum evaluation feeds back into curriculum development: it is essential to start teaching and evaluating after the first training modules.

We recommend a preliminary evaluation. To gain an initial picture, the first training module should undergo a phased test in teaching with two groups. The first test group should be technical experts not directly connected with developing the business training module. The second test group are the local technical trainers with company experience. The third test group is then the actual target group of the training, the industrial-technical trainees. With the findings from these tests we can make our first revisions while still developing the training modules before actually beginning with the supplementary training.

The questions we pose in curriculum evaluation are of vital interest. They are not confined to the examination of the learners; they also have to do with possible faults in curriculum planning and development. In the long run the occupational experience of the qualified trainees needs to be included in the curriculum evaluation: this is the ultimate yardstick for the success or failure of the supplementary business curriculum.

The fundamental key questions to evaluate the curriculum are as follows:

1. What are the learning achievements at the end of the supplementary training?

2. What are the reasons for the shortcomings in the supplementary business training?

These general questions must be supplemented by the following special questions which derive from the nature of the supplementary business curriculum. They pertain to the core of the curriculum and should be accorded priority in evaluation (they are largely the result of planning steps 2-8):

1. Was the basic curricular decision to link training goals and topics with business routines and ongoing business decision-making right?

2. How effective was the desired close link between industrial-technical and business topics?

3. What is the best way to match up the technical and business training courses?

4. Have technical and business trainers cooperated and if so, how would you assess this cooperation?

5. Do the developed training modules of the framework curriculum cover the range of necessary business knowledge for your own business course?

6. How would you assess the structure of the modules? Are they close enough to practice and is the level appropriate?

7. Do the trainers keep close to industrial-technical practice and train for practice or do they cling to abstract theory?

8. How do the trainers deal with suggestions on method (mobilize trainees, run projects)? Are they adopting a new teaching style?

9. How do the trainers respond to the notion of the business toolbox and do they view this as a major training goal?

10. How do trainees respond to pro-active, practical, activity-centred training and teaching forms? Do they draw connections with industrial-technical work operations and does that make sense to them?

The curriculum evaluation can result in far-reaching changes to the curriculum project. It may not, however, call into question the basic approach: its concern is to get the best out of that approach. When the CWG (above all the business expert assigned to the technical project) evaluates the curriculum, it can only monitor lessons to a limited degree. These observations must be supplemented by evaluation discussions with the trainers involved (technical, business) and the trainees. Both procedures - monitoring teachers/trainers and evaluation discussions - must be recorded and these notes used as a basis for discussion in the CWG (to ensure purposeful discussion).

Above all we cannot do without the evaluation of the training by the teachers and trainers themselves. Without their self assessment of what they experience and how they behave in teaching and training, the basis for the evaluation will be too narrow, despite the subjective teacher bias (although outside observers also have 'their' point of view). The CWG must draft a straightforward self-evaluation questionnaire which allows for brief answers (the questions should be geared to the above question list). Responsibility for the long-term effectiveness of the supplementary business training (how does the supplementary business training help trainees in occupational practice) must be borne by the industrial-technical project leader. He/she is usually the only person involved for long enough in the industrial-technical project to do this job and convey the findings to the GTZ and the authors of this guide.

Part IV: Closing remark

We hope you have found our guide interesting enough to read and work through. We look forward to suggestions for improvements and especially the findings from the integrated projects to be able to make substantive changes (e.g. including new modules, supplementing the basic approach) and above all to cater better for the specific interests of the industrial-technical training project in supplementary business training. (Addresses: R. Dröge, G. Neumann, Universität Kassel, Institut für Berufsbildung, Heinrich-Plett-Str. 40, D 34109 Kassel, Tel: 0561/8044549, Sekr. 8044548, Fax: 0561/8044007, E-Mail: heller@hrz.uni-kassel.de and C. Przyklenk, E. Bähr, A. Becker, GTZ, Postfach 5180, D 65726 Eschborn, Tel. 06196/791463, Fax: 06196/797181, Claus. Przyklenk@gtz.de)