Beiträge aus der Praxis der beruflichen Bildung

Nr. 1

Competency-based training

Compilation of seminar subject matter: Training the trainers

InWent

Internationale Weiterbildung und Entwicklung gGmbH
Capacity Building International, Germany

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InWEnt

InWEnt – Internationale Weiterbildung und Entwicklung gGmbH (Capacity Building International, Germany) - is an organisation for international human resource development, advanced training and dialogue. Established through the merger of the Carl-Duisberg-Gesellschaft (CDG) e.V. and the German Foundation for International Development (DSE), it can draw on decades of experience accumulated by the two organisations in the field of international co-operation. Its practice-oriented programmes are directed at specialist staff and managers, as well as decision-makers from business and industry, politics, public administration and civil society from all parts of the globe. Its Development Policy Forum arranges high-calibre international policy dialogues on subjects of current concerns in the field of development policy.

Division 4.01 of InWEnt was created out of the merger of two specialist sections of the Industrial Occupations Promotion Centre (ZGB) of the DSE and has its seat in Mannheim. Under the banner of “sustainable management”, its work focuses on questions of technology co-operation, system development and management in the field of technical and vocational education and training. Its dialogue and training programmes are targeted at decision-makers from the public and private sectors, junior managers and multipliers from vocational training systems.

Introduction

From 2003 onwards, InWEnt´s Division "Technological Cooperation, System Development and Management in Vocational Training" is to present a series on everyday practice in vocational training.

The intention of this series is described in the title itself ("Beiträge aus der Praxis der beruflichen Bildung" = series on everyday practice in vocational training). The division aims to support its programs of international personnel development in the above-mentioned areas with technical documentation in both printed and electronic form.

These reports

- originate in the partner countries, taking into account specific situational demand
- will be tested with and for experts in vocational training in the partner countries in conjunction with respective practice-oriented training programs on offer, and
- with a view to global learning, will be improved and adapted prior to publication according to the recommendations of the partners or the results of the pilot events.

Thus, the Division "Technological Cooperation, System Development and Management in Vocational Training " is applying the requirements of InWEnt´s training program to its own products in the above faculties: i.e. these can only be as good as their practical relevance for the experts of vocational training systems in the partner countries.

To this effect, we look forward to critical and constructive feedback from all readers and users of these special series.

This manual is one of an entire series of InWEnt publications that have been produced as a result of training seminars and courses carried out in cooperation with the vocational training institute SENATI in Peru.

Our special thanks go to Prof. Tippelt of Munich University and Mr. Amorós from the "International Cooperation Office", who both made invaluable contributions to these activities.

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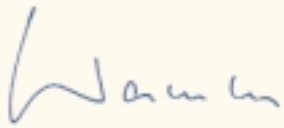

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An introduction to the concept of competency

significant reforms

In most European countries – Germany, Spain, France, Great Britain, etcetera, significant reforms have been made in recent years in the field of better adapting vocational training to the needs of the labour market and employment system.

higher-level qualifications

Changes affecting the structure of the market, technological innovations and new ways of organising work have required new knowledge and the development of areas of competency that hitherto only very rarely formed a part of vocational training systems. Also, as a result of the demand for new professional positions and the higher-level qualifications these call for, vocational training systems have obviously had to be modified in order to adequately provide an answer to the new requirements.

new professional qualifications concepts

At a company level, these factors have implied large-scale technological transformation and organisational change, leading to new professional qualifications models. The resulting profile of the "new qualified worker", who has been defined by many experts as a "systems regulator", considers not only professional competency in itself but also that workers should be able to take their own initiative and independently influence the nature of the work their post involves.

The tendency to develop "new" professional qualifications stems from the need to strengthen the following areas:

- teamwork,
- independent decision making abilities,
- inter-group communication,
- awareness of quality criteria,
- multifunctional teamwork, etcetera.

different views of competency

Evidently, the concept of competency is subject to a process of continual change (See Figure 1 – Competency undergoing continual change), and different ideas are being developed simultaneously. Nonetheless, all these reflect, in varying degrees, an evolution in the demand for qualifications. Debate over this area in Europe has identified various competency-based training models or approaches.

Competency undergoing continual change

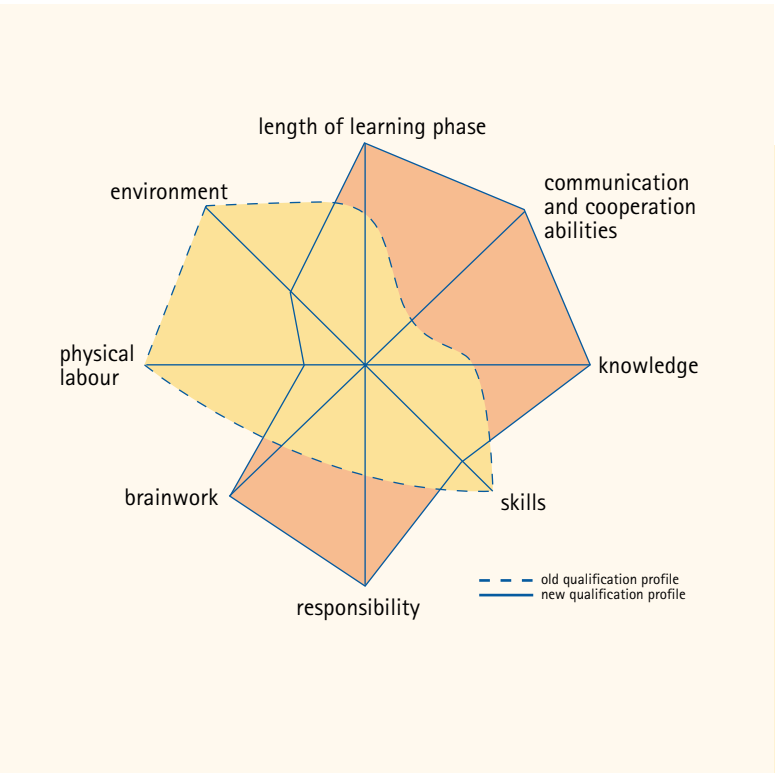

Figure 1

Different views of competency

the functionalistic focus

The functionalistic focus, which originated in the United Kingdom, is essentially concerned with the evaluation of performance, in accordance with established norms (functional analysis): "Competency refers to the group of skills and knowledge which are applied in order to carry out a task or function, in accordance with the requirements imposed by the job."

the constructivist focus

The constructivist focus, which originated in France, as a critique of traditional scholastic theoretical knowledge based pedagogy, defines professional proficiency as: "the individual and collective understanding of productive situations subjected to the complexity of problems which cause its evolution."

The company is conceived as: "a group of dysfunctions understood as being problems. The analysis of dysfunctions includes the less qualified workers".

the holistic integrative focus

The holistic-integrative focus: In Germany, the debate over competency is closely linked to "global professional definitions which place greater emphasis on the improvement of the training process".

As seen earlier, (see the didactic unit entitled "The Dual System), the German Dual System provides to the trainees initial training for different occupations. The modular systems employed in the UK, however, prepare students or apprentices for a group of occupations or positions too diverse as too be limited to one single profession. This conceptualisation of initial vocational training as a system of occupations that leads young people to a global professional qualification – rather than a series of partial qualifications – forms the basis of the holistic competency-based training focus.

professional competency

According to G. Bunk's definition (1994) "A person has professional competency if he or she has the knowledge, skills and abilities he requires to carry out an occupation, if he or she can solve tasks independently and flexibly and is both willing and able to plan ahead in his working sphere and within work-organisational structures".

a unitary and dynamic group

This German focus transcends mere technical specialisation (technical competency). Here competency is considered as a unitary and dynamic group in itself. Different work situations call for different qualities (knowledge, ability, skills) which should be combined, coordinated and integrated in such a way as to enable workers to efficiently carry out the tasks that make up their professional activity. This relational holistic approach serves us as the base for the following definitions of competency:

technical competency

Technical competency: The assimilation of the cognitive capabilities and motor skills inherent to an occupation, as regulated by legislation or the demands of the post. Two aspects need to be emphasised:

- the normative aspect: in the specific case of Germany, technical competency is defined and validated by means of the corresponding Training Regulations.
- the demands of the post aspect: an occupational or activities analysis is used to define how technical competency can be attained, which then forms a standard that can be applied to a variety of professional or workplace situations (this is the very same procedure used to prepare occupational profiles through the DACUM method).

methodological competency

Methodological competency: the ability to self-inform and assimilate fundamental learning and workplace techniques, as well as knowing how to react to workplace situations, applying suitable procedures to the tasks commended.

the ability to adapt

The speed at which technological change is occurring makes it unrealistic to assume that once trained in one area, an apprentice will be able to carry on operating within it indefinitely. Training has to be seen as continuous rather than forming a single stage in a person's life. This requires an initiative-taking skills focus (independent planning, carrying out and control of tasks) plus an investment in permanent knowledge renewal (the ability to adapt). Consequentially, it becomes necessary to develop new and innovative didactic strategies which will form the base of new learning models.

social competency

Social competency: The ability to cooperate and deal with other people through the assimilation of basic cooperation and communication skills.

the ability to cooperate and communicate

It should be stressed that, from a pedagogic perspective, social competency is not a normative requirement but rather an exigency which stems from organisational and work process changes. In the context of the labour market, group work is increasingly important (independent production groups, learning islands). From a standpoint of in-company organisational development and vocational training, group work qualifications (group learning), are focused on the development of cooperative and communicative skills. It is clear that, in many sectors of economic activity, the Taylorist model is now being replaced by holistic forms of working. (See Figure 2 – Important aspects of the work organisation and structure transformation processes)

Important aspects of the work organisation and structure transformation processes

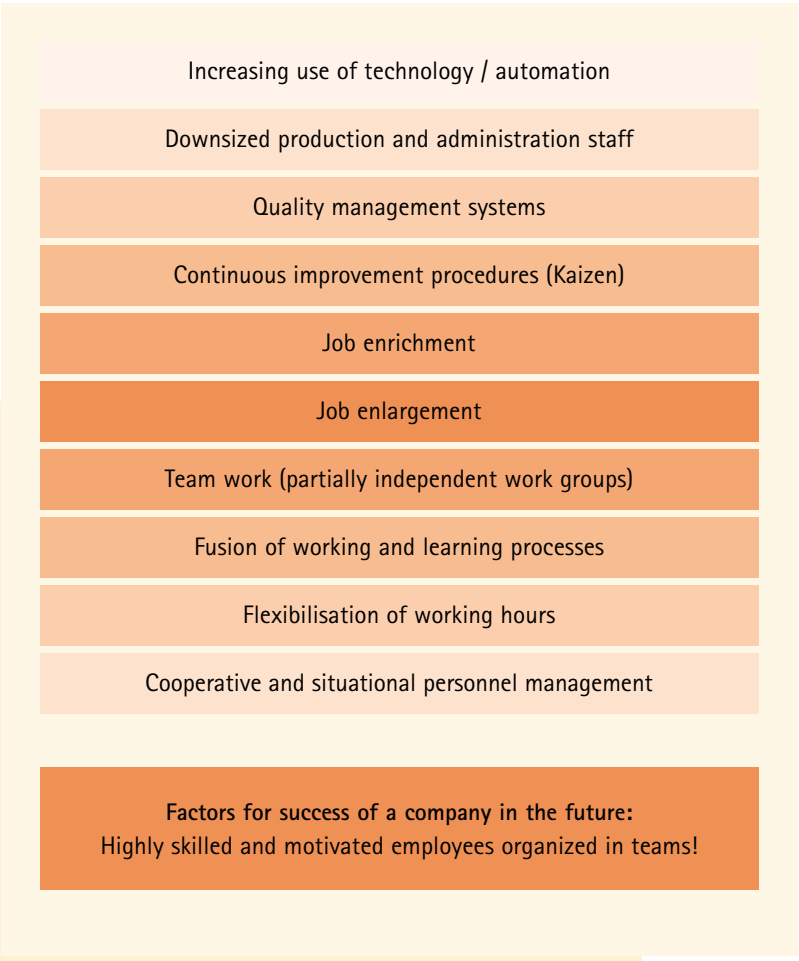

Figure 2

individual competency

Individual competency: the ability to reflect on one's own actions: Objectives are; self-knowledge and responsibility, plus development of personal interests and life-plans. Individual competency plays a very important role in German companies, although not in the sense of delegating functions (responsibilities), rather in that every member of an organisation assumes responsibility for their own role.

reflecting on self performance

It is necessary to reflect on self performance and collaborative abilities in order to analyse the need for improvement, taking into consideration the following:

> planning and setting up of goals,
> motivation,
> the desire to plan for the future (thinking about the future and anticipating future possibilities),
> Professional commitment – professionals should feel strongly committed to their vocation and the ethical rules that govern it.

professional action skills training

Any definition of competency should take into account the characteristics of the various models outlined here (to which could be added, for example, participative competency, etcetera) integrating these into a single main objective.

The conjunction of the four dimensions of competency – technical, methodological, social and individual – that are promoted and transmitted integrally through vocational training, brings us to the main objective of competency based training preparing people with professional action skills. (See Figure 3 – Required competency)

This focus is based on the idea that competency is not the fact of simply "possessing" certain resources (skills) but rather putting these into practice. As various authors have already indicated "competency can only be defined in action".

Required competency

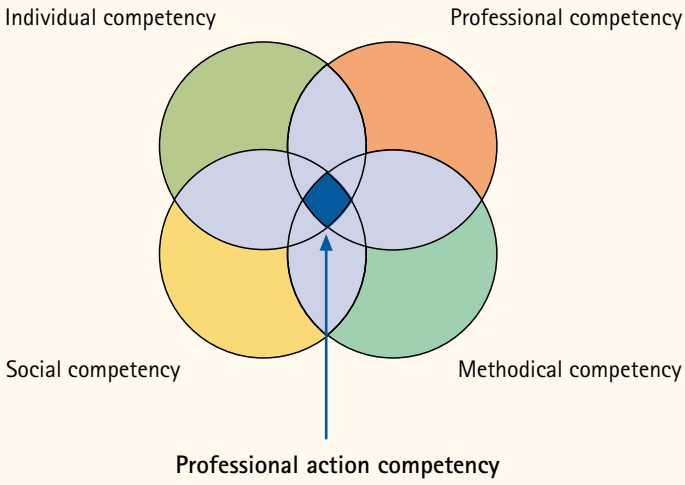

Figure 3

"Performance / action"

In basic terms, the performance/action concept can be divided into two dimensions:
Performance in the sense that once apprentices have completed the formal training process, they will be able to continue their training independently, adapting themselves to technological changes and new organisational concepts. Performance in the

sense that apprentices should be able not only to assimilate and apply knowledge acquired from others but also to generate their own knowledge and thus further develop their professional careers.

If this concept is applied to the training of students, which is our main focus here, we can deduce that training situations need to be action based. This means that the carrying out of practical activities is an essential part of vocational training, not only as because of its relevance but also as it serves to support the experiential structure.

As T. Vogel has indicated, the concepts of competency development originate from the complete action model in which students learn, using as much self-direction as possible, actions that go from the stage of compiling information, planning, decision making, execution and control, to the evaluation of their own performance, and, at the same time attain technical and social competency, as well as acquiring the ability to act independently, which are core elements of a wide ranging professional action competency.

Ability, qualifications and professional competency

the evolution and conceptualisation of these terms

From a pedagogical and learning theory perspective and in order to define learning strategy criteria and conditions it is important to analyse the evolution and conceptualisation of these three terms.

"occupational ability"

As G. Bunk has indicated (1994), until the beginning of the nineteen sixties, the term "occupational ability" was widely used. Vocational training used to be based mostly on the development of "occupational abilities, taken to mean a collection of knowledge, skills and abilities required to perform the defined tasks associated with specific occupations". An occupation was basically considered a mere tool applied to training for the carrying out of specific tasks. The reference to work and occupation was meant to categorize simple methodological adaptation, as opposed to didactic implementation.

"occupational qualifications"

The concept of occupational qualifications was first introduced in Germany towards the end of the nineteen-sixties. This was intended to be the first step in the adaptation of vocational training to technological, economic and social changes. The term occupational qualifications also referred to "knowledge, skills and abilities required for individual occupations, but the term has been expanded to include flexibility and independence". This represented an important advance – in accordance with the changes to the labour market – in that it represented a move away from dependence towards independence.

"conceptual differences"

As can be seen in Figure 4, conceptual differences are mostly related to environment or field of action. The introduction of this new concept is aimed at achieving a greater degree of professional flexibility

Conceptual differences

	Occupational ability	Occupational qualifications	Occupational competency
Occupational elements	Knowledge Skills Abilities	Knowledge Skills Abilities	Knowledge Skills Abilities
Scope of action	Defined and founded on individual occupations	Flexibility within one occupation	Associated occupational fields and work organization
Character of work	Fixed operative work	Unfixed operative work	Free planning for work
Organizational level	Externally organized	Self-organized	Organized by the Individual himself

Figure 4

in so much as the apprentices themselves are able to independently control planning, execution and control of certain learning tasks.

a more active participation

As this is a new process for both apprentices and teachers, it is obvious and quite natural that certain difficulties should present themselves. Nonetheless, youngsters are given the opportunity to take a more active and autonomous participation in their training processes.

professional competency

"Just as with occupational ability and occupational qualifications, occupational/professional competency is based on bundled knowledge, skills and abilities related to a particular occupation, but it also includes a working knowledge of associated areas as well as work organisation and planning activities. If the move from occupational ability to occupational qualification was quantitative, then the move from occupational qualification to occupational competency was qualitative... The role of the competent employee has changed completely: from being 'externally organised' to being 'self-organised'".

communicating and stimulating competency

It is obvious that all the so-called "new forms of organisation" (total quality management, quality circles, participatory management, production islands, et cetera) have necessitated the use of people's skills from a organisational theory and business management standpoint. The best way to capitalise

on this "organisational potential" is to communicate and stimulate social skills by means of initial vocational training.

the new functions of the qualified worker

Careful study of the list describing the new functions of qualified workers shows that there is a close relation between these and the four kinds of social competency, as defined by the G. Bunk model (1994). (See Figure 5 – The new functions of skilled workers)

technical competency

Technical competency is held by those who are able to carry out activities and tasks in their field of work in a responsible and competent manner and possess the required knowledge and skills to do so.

methodological competency

Methodological competency is held by those who are able to react to problems they are set and to deviations from the norm in a manner that is appropriate, using the procedure expected, who can find solutions independently and apply experience gained to find sensible solutions to other problems.

social competency

Social competency is held by those who are able to work both communicatively and cooperatively with others and who show team-oriented behaviour and inter-personal understanding.

The new functions of qualified workers

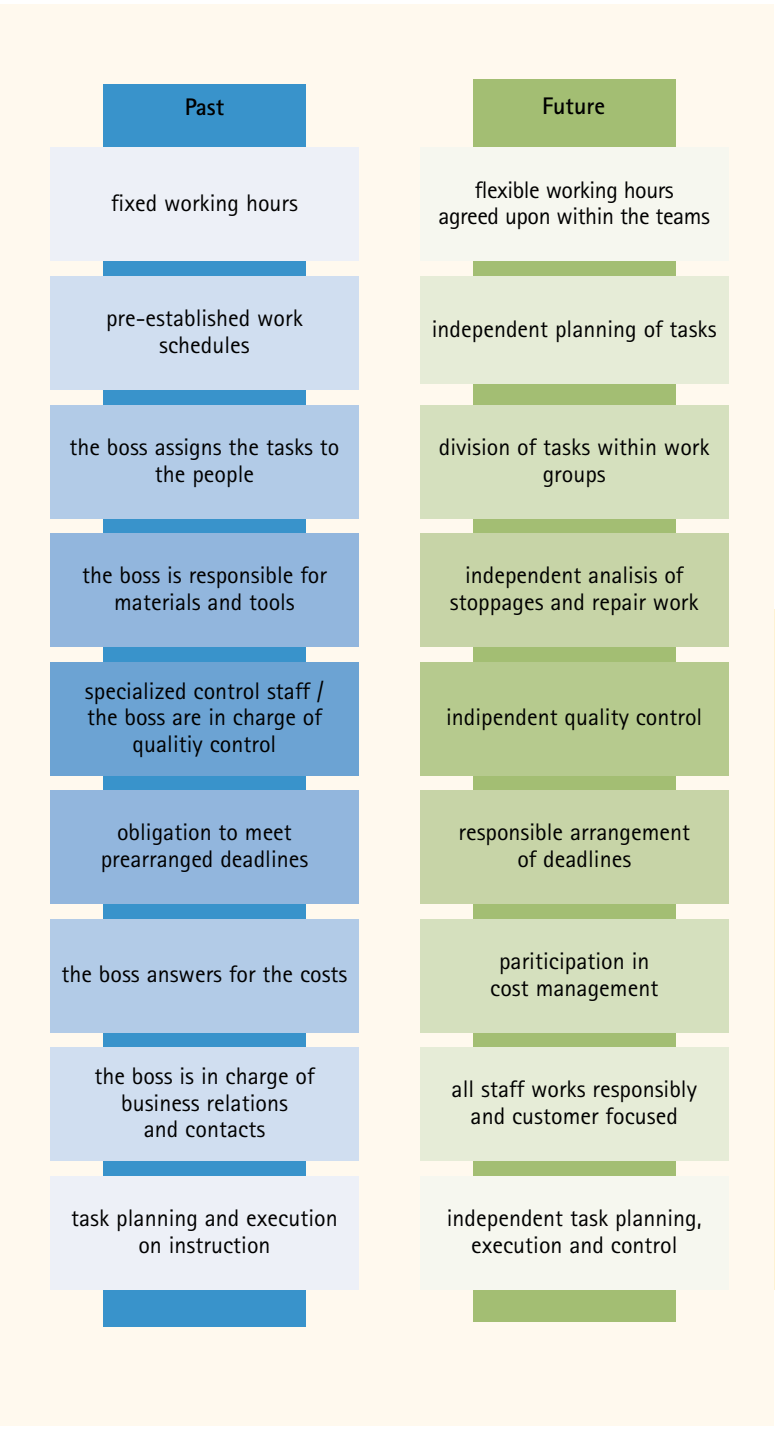

Figure 5

Professional action competency

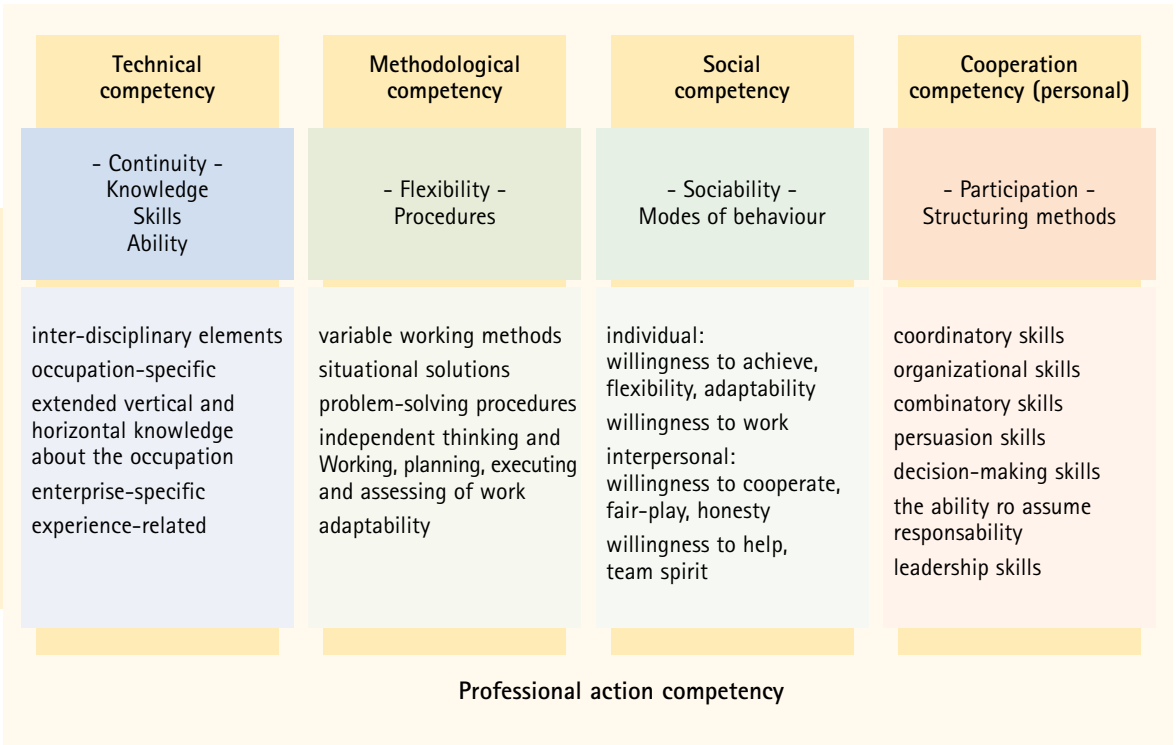

Figure 6

participatory competency

Participatory competency is held by those who are able to contribute towards constructing the working environment at their own workplace and beyond, can plan ahead, assume organisational tasks, take decisions and are willing to assume responsibility.

practical application of skills

The growing demand for competency-based vocational training is being addressed not only at the level of the vocational training environment but also within the labour market itself. More importantly, competency does not consist of simply having mastered certain skills but includes their practical application. (See Figure 6 - Professional action competency)

the learning organisation

Professional action competency can be defined as a relational combination of technical, methodological, social and individual competency. None of these elements can be excluded, as their absence would make the training of professionally qualified and self-responsible workers unviable. And these are precisely the type of workers required by modern companies. Production work, quality control, maintenance and process control now form – at least partially – part of this new and highly developed organisational model: the learning organisation.

The importance of key qualifications

"key qualifications"

It should first be stressed that the concept of key qualifications was applied in Germany long before the debate over professional competency began. From the outset of the nineteen-seventies, based on occupational studies and revision of qualification profiles, it became evident that it was practically impossible to predict the kind of technical qualifications that would be required in the near future. For this reason, and in order to ensure that none of the skills taught would become obsolete in the short term, as a result of rapid technological and organisational changes, a new conceptual model was introduced, namely "key qualifications".

basic, wide ranging and interdisciplinary qualifications

What key qualifications intend to achieve: The term refers to those basic qualifications, both wide-ranging and interdisciplinary, that embrace an entire occupational family. These qualifications, less likely to be affected by technological changes and the passage of time, become the basis of other qualifications introduced at the same time as changes are made to occupational profiles.

an ability for a wide variety of positions and functions

There is a general consensus running through the concept of key qualifications, as defined by Mertens, in 1974, who argued that key qualifications are knowledge, abilities and competency that, rather than simply facilitating the direct and precise relationship between certain isolated practical activities, provide:

> an ability for a wide variety of posts and functions, as alternative options for the same temporal point, and also,
> an ability for the mastering of series of changes in demand, mostly unpredictable, throughout one's professional life.

knowledge and skills

Mertens' definition refers to knowledge and skills that has a wider application than a single given occupation (for example, decision taking initiative, communication skills, methodological flexibility, integration skills, willingness to cooperate, etcetera).

mid and long term qualifications objectives

Key qualifications form the basis for a wide-ranging training model focused on a greater degree of competency as applied to qualifications in the mid and long term. The main role of key qualifications is to establish the framework of a training process able to dynamically complement, update and anticipate the need for new qualifications. Learning cannot be limited to the attainment of purely technical and individual skills. An active participation in new work organisation models is essential, and requires the development of new training focuses in order to instil key qualifications, teamwork and self-learning skills.

within a technical competency framework

It would be a mistake to assume that either these key qualifications or areas of competency, such as, for example, communicative skills, a willingness to cooperate, organisational abilities and team spirit, can be attained "abstractly" or, in other words, separated from technical competency. Were such a division to exist, it would necessarily imply a practical loss of technical competency. For this reason, key qualifications can only be attained within a technical competency framework. Social, methodological and individual skills need to form part of the technical environment. It is evident that social skills, such as a willingness to cooperate, for example can be taught separately within a formal school context but this would not be viable in the area of vocational training.

Competency development methods

a multiplicity of methods

In order that students acquire different areas of competency in a "real-world" work context – especially with respect to a practical vocational training – suitable teaching-learning methods need to be selected. It is clear that each trainer (instructor or monitor) will have a preference for one or other method but it should be stressed that what makes a teaching-learning method truly effective is the variety, the multiplicity, of the methods employed.

getting to know and master each method

Ideally, each trainer should get to know and master all the available methods, in order to identify the most suitable of these with respect to each area of competency. The trainer should also be aware of the strengths and weaknesses of each method.

By way of an example, in the area of technical competency there are various methods to choose from, such as technical simulation, demonstration, etcetera while, in the area of social skills, role plays, metaplan and others can be applied. (See Figure 7 - Competency development methods)

Teaching Learning methods for each area competency

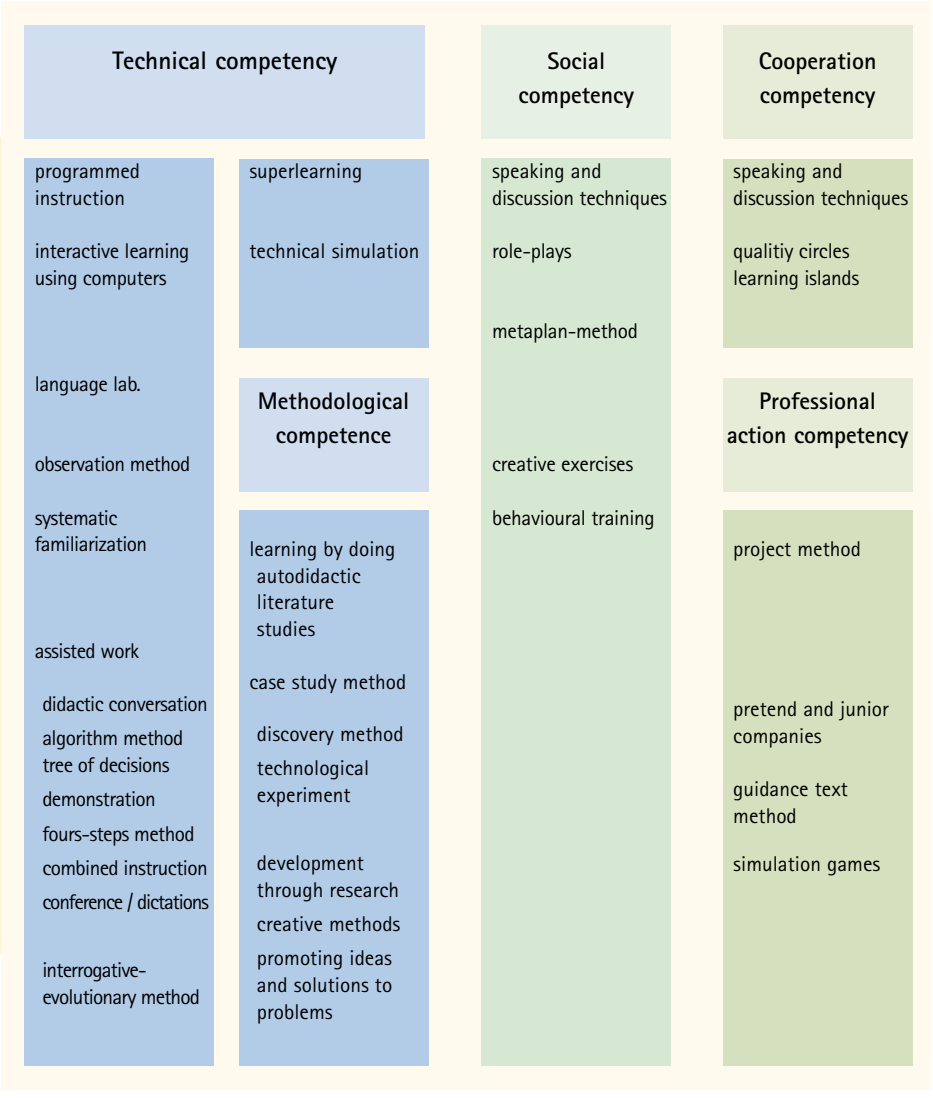

Figure 7

the project method

In the area of cooperation competency, one of the most up-to-date and popular methods used by the larger of the German companies is the learning islands method.

For action competency, it is the project method that stands out. This method has become increasingly relevant not only in the area of in-company training but also as applied to vocational training centres themselves. Social and in-company training changes are most clearly reflected in the project method, which as a teaching model presents a whole series of advantages from a pedagogical point of view, including the following:

- The apprentices themselves learn to take decisions.
- They have to learn to organise their learning process.
- They build their own knowledge, in such a way as to facilitate the transferral and retention of information.
- Participation in selecting the project theme helps the group to feel strongly identified with the task to be carried out.

Effective learning methods (modified according to Bullinger/Gidion)

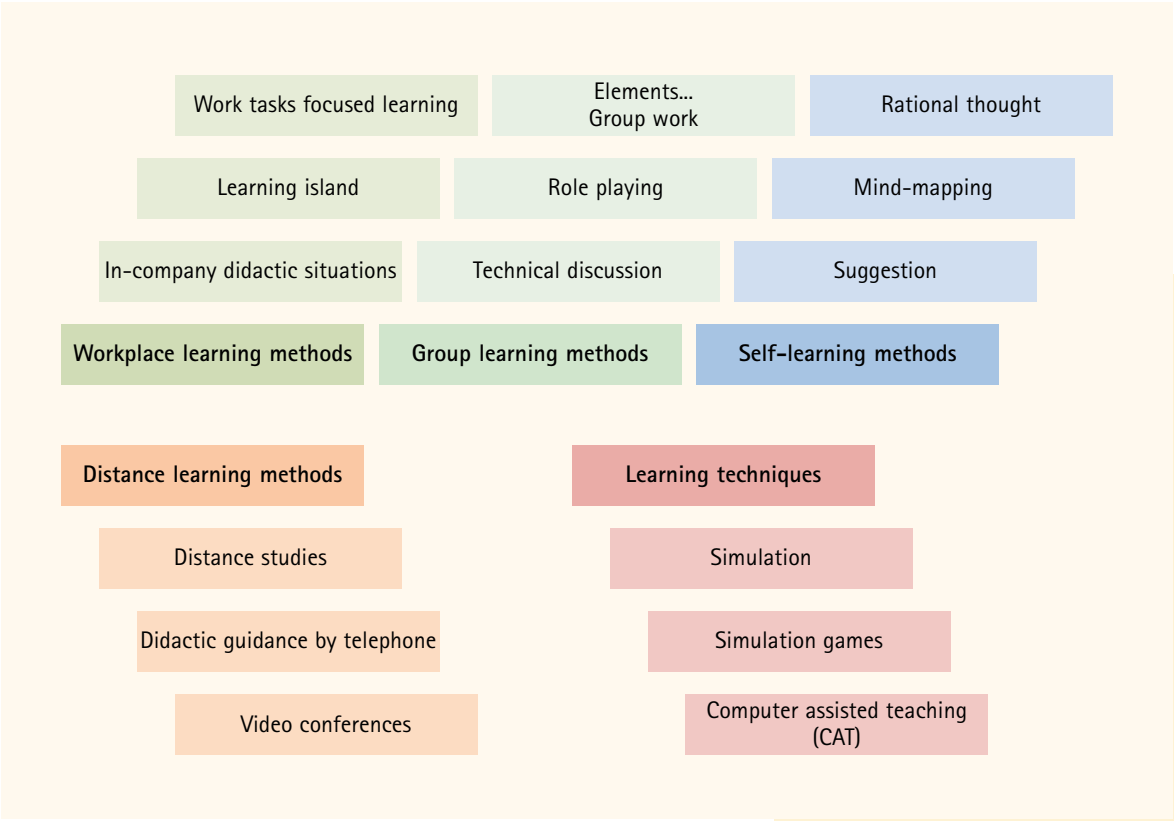

Figure 8, Source: Development of Qualifications Management Round Table (editor): Competency '96, Berlin 1996

The need for many occupations to adapt to new areas of competency also signifies new demands for trainers, which has brought about a radical change in their role and functions. It is no longer enough to be a simple "knowledge transmitter" who makes sure that students have learned the theoretic nuclei of certain subjects, but rather to become a facilitator and learning situations designer.

new demands for trainers

None of this can be put into practice through simply using traditional teacher's presentation and textbook based methods. It is important that trainers also help students to develop basic competency skills, such as initiative taking and teamwork abilities, as well as communication, decision-making, and problem solving capabilities, amongst others. In order to do this, trainers must have a complete "methodological toolkit" at their disposal to be used in the transmission of wide ranging areas of competency. (See Figure 8, Effective learning methods)

A practical example of competency development

professional action competency

As numerous occupations have been reorganised and new ones created (especially in the area of information technology), the acquirement of professional action competency has become a key area in the in-company training of apprentices.
Professional competency has been included in the new Vocational Training Regulations, although in a very generalised fashion, as a new qualification requirement for apprentices, who "should learn how to plan, carry out and control tasks independently".

The example of a German company (Siemens)

It has already been stated that the requirements laid out in the Training Regulations are obligatory for all companies, as their apprentices have to sit a standardized final exam. The question that remains is how to best develop and drill the necessary competency.

Most German companies have been developing their own learning strategies in order to ensure that their apprentices are equipped to meet the demands of the new exam. A German company (Siemens) can serve us as an example of how one company, using as its base the Training Regulations, has integrated various competency profiles in its learning plans. Siemens divides professional action competency into four areas:

specific competency

Specific competency (basic knowledge and skills) – The ability to analyse and recognise intra and inter-disciplinary relationships, specific creativity and independent task realization (based on a profound knowledge of a given occupation in accordance with the requirements of the client.
This definition contains a very relevant and innovative concept, namely that the commercial interests of the client should coincide with the training interests of the individual (independent task realization).

individual competency

Individual competency – the ability to create a believable and convincing impression, by means of independent thought and creativity.
It should be stressed that "creativity", especially, is a highly important key qualification (as applied to problem-solving, for example).

social competency

Social competency – the ability to reach agreement with others and be part of a team, to develop a capacity for dialogue, achieve common objectives through work and discussion and, if necessary, be able to moderate a group's activities.

The rejection of the Taylorist principle of working and the reintegration of functions previously separated, have enabled teamwork and a capacity for dialogue to become a priority for all modern organisations.

methodological competency

Methodological competency – the ability to analyse and recognise action structures, search for information independently, select and apply the information required for a given work situation, handle various methods of working and analysis, all based on a given or created objective.

In the area of action competency, self-learning is highly important, as it is a basic principle in the stimulation or attainment of methodological competency.

Changes in competencies

Factors of competency	Old content	New content
Responsibility	Based on behaviour, such as effort and discipline	Based on taking the initiative
Expertise	Related to experience	Cognitive – identifying and solving problems
Interdependence	Sequential; hierarchic	Systemic; group work
Education and training	Acquired once for all	Continuous
Learning	Passive – being trained	Responsible for own learning – self-learning, lifelong learning

Figure 9, Source: Green A., Wolf A., Leney T., 1999. Convergence and divergence in European education and training systems. Institute of Education. University of London: Bedford Way Papers, p. 128, adapted by the European Commission, Eurotecnet programme.

an even greater relevance

From an in-company training perspective, the aforementioned definitions take on even greater relevance, as originating as they do from the close relationship between organisational development, new competency development and the integrated development of the individual. (See Figure 9 – Changes in competencies)

Conclusions

- Within a European context, forms of competency-based training coexist.
- The German competency model is based on the principle of regulated and officially recognised occupations, from which are excluded partial qualifications.
- Each different area of competency serves a common purpose – the offering of professional action skills training.
- Each area of competency is taught as part of an interrelated environment rather than separately.
- The different areas of competency are not limited to technical-professional knowledge transmission, but unite each element of integrated training.
- There is a close connection between organisational and competency development in modern companies.

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