The examinations field of action: Interim evaluation and future prospects

▶ **Examinations can be a motive force and a supporter of system development but they can also be a restraint and a drag on it. In the past 30 years, examinations have played both of those roles for "Training in Occupations". In the first ten years they were a central means of developing quality assurance in vocational education and training, but subsequently they increasingly came under fire from all sides. The dual system of vocational education and training was undergoing allround modernisation, but there was little change in examination practice. However, things have begun to move in the field of vocational examinations in the last five years. Innovations in examination models and examination structures have largely exhausted the possibilities of the traditional examination system. The changes in the examination system introduced up to now are therefore not the end but rather the beginning of an overdue process of reform.**

DAGMAR LENNARTZ

Ph. D., former Head of the "Quality Standards, Certifications, Examinations, Editing of Ordinances" Section at BIBB

The 1970s: Development of quality assurance through examinations

There are two peculiarities above all that distinguish examinations under the Vocational Training Act from all other public and private examinations: they register and assess vocational skills, knowledge and capabilities according to standards laid down in or as legal ordinances.[1] They certify a qualification recognised federally (as a final examination/journeyman examination or further training examination under § 46,2 BBiG).

After the Vocational Training Act came into force (1969), examinations in the dual system made a decisive contribution to the implementation of national vocational education and training standards. Firstly, through the examination requirements and examination questions as a secret training plan. Secondly, through the bindingly introduced "intermediate examination" arranged on an inter-company basis as a means of monitoring training progress in order to improve training success. This quality assurance concept was supported by the acceleration of the inter-regional development of examination questions.

Traditional structures and forms of examinations

For a long time the structure of the intermediate and final examinations remained almost the same in all the recognised training occupations. The examination consisted of two parts: The written examination as a "knowledge test" and the practical examination termed a "skills test" in the industrial and technical field and a "practical exercise" in the commercial field. The latter was conducted as an oral examination. The traditional range of question types in the individual examination procedures was of manageable size as well.[2] In the *practical examination* there was a test piece and a work sample, whereby in the case of the test piece only the final result was graded, that is, the product

was assessed, while in the case of the work sample the working procedure was assessed as well. The *written examinations* were based on two categories of questions: questions with a set answer (the so-called "programmed examination") and the free answer questions (the so-called "conventional examination"). From the wide spectrum of methods for *oral examinations*, two methods were mostly used in the final examination: the subject and examination talk in the practical exercise and the unstructured oral interview during the supplementary oral examination in industrial and technical occupations.

Dispute about programmed examinations

Up until the early nineties, not much changed in the structure and the forms of examinations. The test piece and the work sample, the written examination with free or set answers and the oral examination continued to be the traditional forms of examinations, although the last named was something of an exception in the industrial and technical occupations.

However, trainers started to voice initial criticism already in the seventies. It was sparked off by the "programmed examination" and its allegedly indispensable limitation to the registration of knowledge of details and facts, and culminated in the polarising controversy about "conventional versus programmed examinations". The fact that, if enough was invested in development, the programmed form permitted the setting of quite complex tasks was largely ignored. As a rule, the fact that in practice to a large extent the conventional written examination also dealt only with knowledge of detail and facts was not taken into account either.

The practical examination did not become the target of criticism quite as quickly. It too was seldom guided by real occupational activities at that time in a large number of occupations, especially in the industrial and technical professions. The possible reason for that blind spot was that the test piece and the work sample were close to reality in reflecting the training workshop training, which was oriented on planning and system: practicing skills with practice pieces, producing products for practice purposes, the production of what was known as "fancy scrap".

It was only towards the end of the eighth decade that skills testing and knowledge testing was discussed in a synopsis, reference of the two parts of the examination to one another was demanded and the vision of a new testing

structure was projected: the examination integrating theory and practice. The idea and concept of replacing the point-by-point final examination by "testing in sections" was also already introduced into the debate at that time but was quickly forgotten by education policy-makers.

The challenge of the 1980s: The "action orientation" training model

The next innovative advance for "training in occupations" was aimed directly at improving training quality. It brought new training models, new forms of learning and new training methods. The system of recognised training occupations now followed a skills concept that supplemented competence in the subject with method competence and social competence. The necessary consequences for examination practice, however, were not drawn.[3] The examinations in vocational education and training remained limited to their traditional structures and forms. They covered practical skills and theoretical knowledge but not thinking and acting with an orientation towards the work process.

In the training kitchen of the Vocational Training Centre for Crafts and Commercial Occupations – International Union – trainees have the chance to put their theoretical knowledge into practice

The 1990s: Training and examination practice drift apart

The replacement of traditional, usually function-oriented, organisational structures with process-oriented organisational forms revolutionised the (function-oriented) skilled labour profile established in the seventies as well: the importance of process-oriented qualifications increased at the same rate as the related trend towards more flexibility and individuality in training. The gap between training and examining increased just as rapidly. Criticism was no longer limited to individual parts of the examination and question

forms but was directed at the rigid examination structure with its subject-bound written examination sections on the one hand and the often highly isolated work samples and test pieces on the other.

## The first hesitant steps towards reform: Trying out a new examination structure

The breakthrough for practically oriented, action-oriented examination concepts came with the introduction (on a trial basis at first) of the "integrated examination" in the Engineering Draftsman/Draftswoman recognised training occupation (1994). In a approach that was the most uncompromising breach with existing examination structures to date, for the first time, no line was drawn between the theoretical and the practical parts of the examination. With an eye to the goal of "practical orientation", the task developers were instructed to formulate questions related to real work situations.

Figure 1 **Innovative forms of examinations – Guiding principles of skills detection**

• **Principle of process orientation**
Embedding action in the preceding and following processes

• **Principle of action orientation**
Integrating occupational working requirements into a complete occupational procedure

• **Principle of practical orientation**
Simulation of occupational working requirements

Source: BIBB-Ebbinghaus/Frank 2003

Innovation target: Practically oriented examinations

The integrated examination model remained an isolated case. At the same time it had great innovative power. Within a very short time the participating bodies and institutions were able to shake off outdated concepts in modernising recognised training occupations and introduce new, practically oriented forms of examinations. In almost all the new and restructured occupations, tasks have been introduced in the past five years that are directed towards registering knowledge and skills in the forms of practical vocational action (cf. Figure 1).

Whether they were proclaimed to be integrated, complex or action-oriented, practically oriented forms of examinations pursued the goal of simulating a real vocational requirement situation in the examination. It is characteristic of the current upheaval that this paradigm shift in examination requirements is still expressed in a multitude of concepts (cf. Figure 2).

"Authenticity" as the new model

The "action orientation" and "practical orientation" models were soon overhauled by another model. With the new model, "authenticity", the modernisation of the examination system at the same time experienced a revival and accentuation of the old controversy about centralised versus decentralised question formulation. It took place most particularly in the run-up to the current restructuring of the industrial metal-working professions and demanded an additional period of clarification.
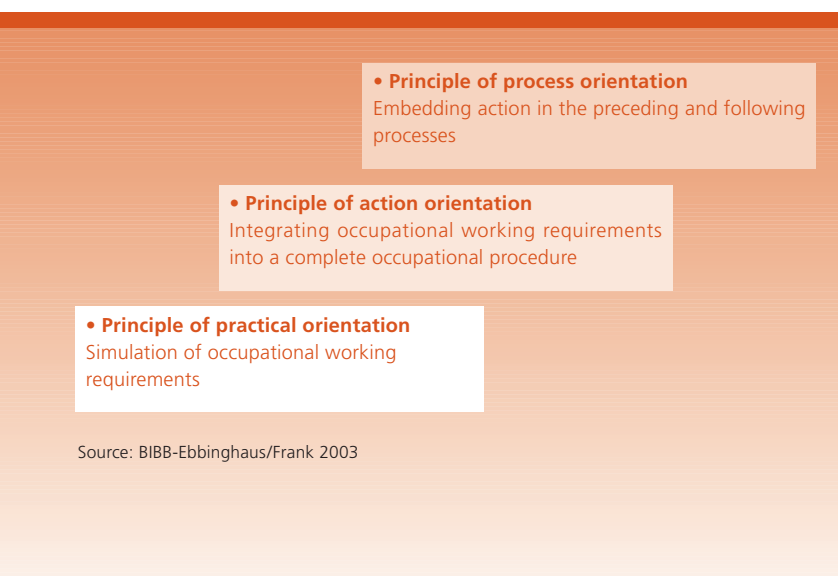
While practical orientation is targeted at imitating professional work *requirements* and action orientation is based on the model of complete professional working *procedures*, the "authenticity" model now makes real work *processes* in a real working environment the subject matter of the examination. Authentic examinations do not reflect the reality of the company. They are a part of that reality. Processing and documentation takes place in the enterprise. The examination board assesses the technical discussion on the basis of documentation. So far the "authenticity" model has been implemented in eight newly created recognised training occupations, for the first time in the four information technology occupations with the "in-company project work" (1997).

Variant model for examining process qualification

The evaluations of new forms of examinations up to now have shown that while authentic examinations make more comprehensive testing of "process competencies" possible, they cannot be implemented in every enterprise and every occupation, or at least not if uniform federal quality standards are to be adhered to. And more and more, the "variant model" revealed itself in the vehement debate about the future testing concept for the industrial metal-working occupations as a promising prospect by means of which the apparent irreconcilability of the positions (simulation versus authenticity) could be overcome.[4] It was implemented for the first time when the regulations for the new industrial electrical trades came into effect on 1 August 2003.[5]

The ramifications of that agreement are considerable. Standards for assessing and approving a company task have to be developed. Examiners have to be able to apply them, i.e. they have to possess the relevant skills and in particular the latest know-how, which changes rapidly. Again, the supra-regional examination question developers face major qualitative and quantitative challenges. Substantially more questions have to be made available in a very short period of time, and above all action-oriented, meaning qualitatively more demanding, questions need to be formulated. Enterprises, on the other hand, have to provide more action and process oriented training than before, and the precondition for that is that they explore and purposefully use the learning potential of occupational tasks. Standardised tasks, routine solutions and uniform questions are thus a thing of the past, as are examination preparations "in the tried and tested manner", blindly swotting old examination questions.

Factors in the success of innovative examination concepts

The evaluation of new forms of examinations has made bottlenecks and weak points in the examination system more sharply visible than before. The increase in quality made potentially possible by the new forms and structures of examinations can therefore be exploited only to a limited extent at the present time. The success of the new examination concepts depends on whether solutions to the fundamental problem of overcoming the bottlenecks and weak points can be found and implemented.

The examiners as factors in success

The recruitment of examination boards was already raising problems in the nineties, and that for various reasons:

The traditional recruitment reservoir for examination boards is shrinking:
- The number of full-time trainers is constantly decreasing; this particularly affects training in the recognised industrial and technical training occupations in manufacturing.
- The growing shortage of personnel in the vocational schools has recently become a problem.
- A generation shift of major proportions is currently taking place in the examination boards.

"Honorary functions" have lost some of their attractiveness:
- All members of examination boards work on an honorary basis.

Figure 2 **New forms of examinations since 1997**

Examination method	Form of examination	Synonyms
Practical examination	Simulated assignment	• occupational task • task corresponding to a company assignment • manufacturing task corresponding to a customer order • complex task • complex occupational task • complex examination question • planning task • planning task referring to practical task • practical task • practical task in the context of case law application • project-oriented practical task
	Company assignment	• company project work • company project • independently performed specialised task in a deployment area
Written examination	Integrated task	• case study • complex practice-related task • planning task • planning task referring to practical task • practice-related task • practice-related cases • situational task
Oral examination	Case-related subject discussion	• elucidation of the practical task • technical discussion • technical discussion about the occupational task • technical discussion about the company assignment • technical discussion about a technical task independently carried out in the deployment area • technical discussion about the presentation of the project work • guest-oriented discussion • customer counselling talk • examination interview

- Innovative forms and methods of examinations make higher demands on the time of examiners.
- The investment in qualification for the examining business is increasing, and the new examination concepts in particular require a specific professional approach to testing.

One central question that has to be clarified is whether the professionalism required of examiners can still be provided and ensured through honorary activity. It is absolutely necessary to find ways of bringing about greater professionalism in the examination boards that are at the same time affordable.

Task development as a factor in success

Through the examination questions, the goals of the examination are implemented, paradigm shifts are attained and reorientations are implemented – or missed. This insight has so far not really been taken to heart in the practice of developing tasks. It is true that isolated pilot experiments and pilot projects have tried out new avenues for action-oriented testing, but in practice the task developers have not aggressively implemented or adapted and further developed the insights gained from them.[6]

> *The current examination landscape: lively diversity, creative disarray, a feeling of optimism*

If "practice" just serves as a disguise for simple knowledge questions or a job situation forms the backdrop for examining traditional knowledge, that alone does not make it action-oriented. In the same way, if single questions isolated from one another are placed in the context of the description of a general situation, that alone does not make the task integrated. Here too, the evaluation showed that orientation of the written questions around work areas and requirements typical of the occupation is not enough.[7]

Even the practical examination does not necessarily run itself. Authentic examinations have problems with validity as well. The company assignment does not of itself guarantee that "professional action competence" will be meaningfully covered, just as the work process as such is no curriculum for process-oriented training. Limiting oneself to the assessment of authentic work samples involves the risk that only certain aspects of professional action competence will be covered.[8] This makes the formulation of problems to be solved in writing all the more important, since especially in the authentic examination they play the important part of supplementing practical vocational actions with a valid assessment of technical knowledge.

Action orientation calls for new avenues in the formulation of questions

The current situation confronts supra-regional task developers with a whole set of demands. The openness of the final examination to variation in design (implemented thus far in the recognised occupations of the chemical industry and the media) requires an incomparably greater diversity of variants than has been needed up to now. The examination models running parallel to one another when new examination structures are introduced or tested require sets of questions for the old and the new forms of examinations in each examination session. For those developing the tasks this also means, last but not least, twice the effort with fewer examinations per set of questions. Finally, the replacement of function orientation by process orientation on the job and in training also leads to new demands on those organising the examinations.

In view of future requirements, the formulators of examination questions must now tackle and master three key tasks:

* Defining standards for developing tasks
* Safeguarding standards
* Professional approach to the formulation of questions

Professional approach to the formulation of questions

The questions for the exams in vocational education and training are still formulated in honorary work, by trainers and by vocational school teachers. In this area as well, there are now limits to honorary work. The formulation of questions for the new types of examinations not only takes more time, it also requires special competence. Competence for which trainers and teachers are not trained and which they do not require in their day-to-day professional work. One possible way out of this dilemma is the formation of combined teams of professional question formulators and honorary examiners (from companies and schools). Another is the systematic indexing of processes typical of the occupation through professional activity analyses. In that way a quality-assuring and at the same time flexibly usable foundation for continued honorary question formulation could be established.

Paths to the future

The current testing landscape is characterised by a lively and, in comparison to the situation earlier, even an ebullient variety, creative disarray and feeling of optimism. Much is in upheaval, and with the reform projects and the reform options, new paths to the future are being created. By way of conclusion, the main goals of this process will be outlined below.

The "Extended Final Examination" option

For a limited number of trades and technical occupations that have been or are about to be restructured, the autonomy of intermediate and final examinations and the differentiation of their functions is temporarily rescinded by means of trial ordinances. This leads to restructuring of the final examination ("extended final examination"). The intermediate examination becomes a credit-bearing part of the final examination, with the examination grade being derived from the weighted grades of the parts. The first trial ordinances were enacted in the summer of 2002 for the laboratory and production occupations in the chemical industry. The trial ordinances for the recognised occupations of Precision Instrument Maker/Repairer and locksmith for the automotive and industrial electrical occupations followed on 1st August 2003. The evaluation so far indicates a positive response.

As a long-term prospect the extended final examination model opens up the (system-transforming) option of developing the traditional testing system of the dual system, based on point-by-point certification, into an account system with (at present) two sub-components, and reviving the fundamental ideal of flexible examination concepts in a new way and under different framework conditions.

The "process-oriented examination" option

As the industrial metal and electrical occupations are restructured, the traditional structures and forms for those occupations as well will be replaced by a flexible, practically oriented examination concept implemented in the context of public examinations according to uniform federal standards. At the same time the "extended final examination" will be tested in the context of the new examination conception.[9]

The new examination concept for the industrial metal and electrical occupations combines a large number of innovative elements that have already been implemented. Because of its broad effect in companies providing training as in all other learning venues, competent agencies and examination boards and in regional and supra-regional task development, it creates a measure of change that when consistently implemented totally reshapes the training and examination landscape in this sector.

Linkage of public examinations and private certification

With the IT Continuing Education and Training Ordinance[10] enacted in the year 2002, completely new roads were taken in the examination system as well. Qualifica-

tions as IT specialists are acquired not through the public examination but in the context of a privately regulated certification procedure. What is certified is the knowledge acquired in the process of work, tested on the basis of documents presented (process-integrated documentation) and prescribed testing criteria. This is what is called "personal certification", i.e. *individually described* competence is certified (and not a competence profile standardised to fit prescribed standards).

Through the IT Continuing Education and Training Ordinance, privately regulated certification procedures thus become a part of the publicly recognised qualification system. The "specialist certificate" is just the beginning, since in the overall concept only the second qualification level has proof of recognition through private certification; the first level, the IT occupations in the dual system, as well as the third and fourth levels (Bachelor and Master levels) end with a public examination.

However: The specialist certificate gives access to the third qualification level and is thus considered equivalent to the IT training certificates. Thus individually proven competencies more or less become public qualifications through private certification, something that never happened before. Herein lies the special reforming power (or explosive power) of the path taken with the IT continuing education and training concept. ■

Remarks

1 The examination requirements for the final training examination/journeyman examination are a part of the training ordinance, which lays down the goals and content of the recognised training occupation in the form of a legal ordinance. Uniformly recognised federal training ordinances under § 46,2 BBiG, on the other hand, regulate the examination requirements only.

2 Forms of testing are differentiations of the written, oral or practical testing procedures. See Federal Institute for Vocational Education and Training (ed.): Wie entstehen Ausbildungsberufe. Leitfaden zur Erarbeitung von Ausbildungsordnungen mit Glossar. Bielefeld 2003, p. 70.

3 One consequence of that omission (among other factors) is that clarification of the revised version of the examination is necessary preceding the current restructuring process in the metal and electrical occupations.

4 The variant model is a part of the skeleton agreement on restructuring the industrial metal trades reached by Gesamtmetall and IG Metall in October 2001. It provides for two variants for the work assignment with two fundamentally different procedures.

5 Cf. in this connection: Borch, H.; Weißmann, H.: Neuordnung der Berufe in Industrie und Handwerk. In: BWP 32 (2003) 5, pp. 9 ff.

6 An insight and overview is given, for example, by Schmidt, J. U. (ed.): Zeitgemäß ausbilden – zeitgemäß prüfen. Theorie und Praxis handlungsorientierter Ausbildung und Prüfung im kaufmännischen Bereich. Bielefeld 1998

7 Ebbinghaus, M.: Gestaltungsoffene Abschlussprüfung. Ergebnisse einer Prüferbefragung im Ausbildungsberuf Mediengestalter/Mediengestalterin für Digital- und Printmedien. Bielefeld 2002

8 Ebbinghaus, M.: Anspruch und Wirklichkeit. Abschlussprüfung von Mechatronikern und Mechatronikerinnen. Bielefeld 2003

9 Cf. Borch, H.; Weißmann, H.: loc. cit., pp. 12 f.

10 Borch, H./Weißmann, H. (ed.): IT-Weiterbildung hat Niveau(s). Das neue IT-Weiterbildungskonzept für Facharbeiter und Seiteneinsteiger. Bielefeld 2002