Establishment of Competences in Step with Training, as Related to Learning Outcomes in the *EDGE* Project V 2.0

Sketch of the Model

*The term **learning outcome** designates that part of a qualification which consists in a set of interconnected knowledge, skills, and competences which can be evaluated and validated. Learning outcomes in the EDGE project are packages of competences. They are oriented toward entire work-processes and thereby reflect all the phases of a "self-contained activity".*

The establishment of competences conducted in step with training comprises all knowledge, skills and competences which are described in a learning unit as learning outcomes. These include both specialized competences and competences in areas that span and affect a whole range of specialist areas.

Specialized competences in this context means knowledge, know-how and experience existing within a certain specialized area and used for the achievement of goals and the overcoming of problems within this area.

Competences in areas that span a range of specialist areas, on the other hand, mean models or patterns of action in the personal, social-communicative, or methodical areas which facilitate the achieving of goals and the overcoming of problems in a more general sense.

At the centre of any establishment of competences stands that **process competence** which is decisive for the ability to act effectively within one's profession. This process competence com-

prises the capacity to organize work-processes, to coordinate with others, to keep processes free of errors, to react flexibly to disruptions, malfunctions and other unforeseeable events, and to optimize processes as regards their quality and efficiency.

Evaluating process competence is a matter, above all, of judging the interplay and interaction between the various specialized staff involved in the process, between these latter and the areas located "upstream" and "downstream" from the process directly at issue, and between the production process itself and the service and support processes that proceed parallel to it.

In view of the necessity to ensure authenticity, there come into consideration for competence-establishment only those parts of the tasks examined which correspond to actions typical for the profession in question, which reflect the actual situation of application in its given complexity, and which are linked and associated with one another in a total context which is relevant for the profession concerned.

For this reason, there need to be applied integrated procedures for the establishment of competences, i.e. procedures that comprise both oral and written evaluations.

There apply to the establishment and documentation of competences the following quality standards. So as to ensure an equivalence of results, they apply equally to all companies and enterprises:

- The core of competence-establishment is formed by complex operational work-tasks, which follow the "self-contained activity" principle.
- Competence-establishment is effected via a mix of written and / or oral procedures of evaluation.
- The evaluations of the trade school / vocational school (*Berufsschule*) should also be contributory elements to the establishment and documentation of competences.

- Transparent criteria (scale of evaluations) are to be set for the giving of a "pass" or "fail" mark. A specific scale of marks should ensure that the result of each competence-establishment is a precise one.

The following diagram shows the various areas of competence out of which capacity to act effectively in one's profession emerges, as well as the three selected elements of evaluation:
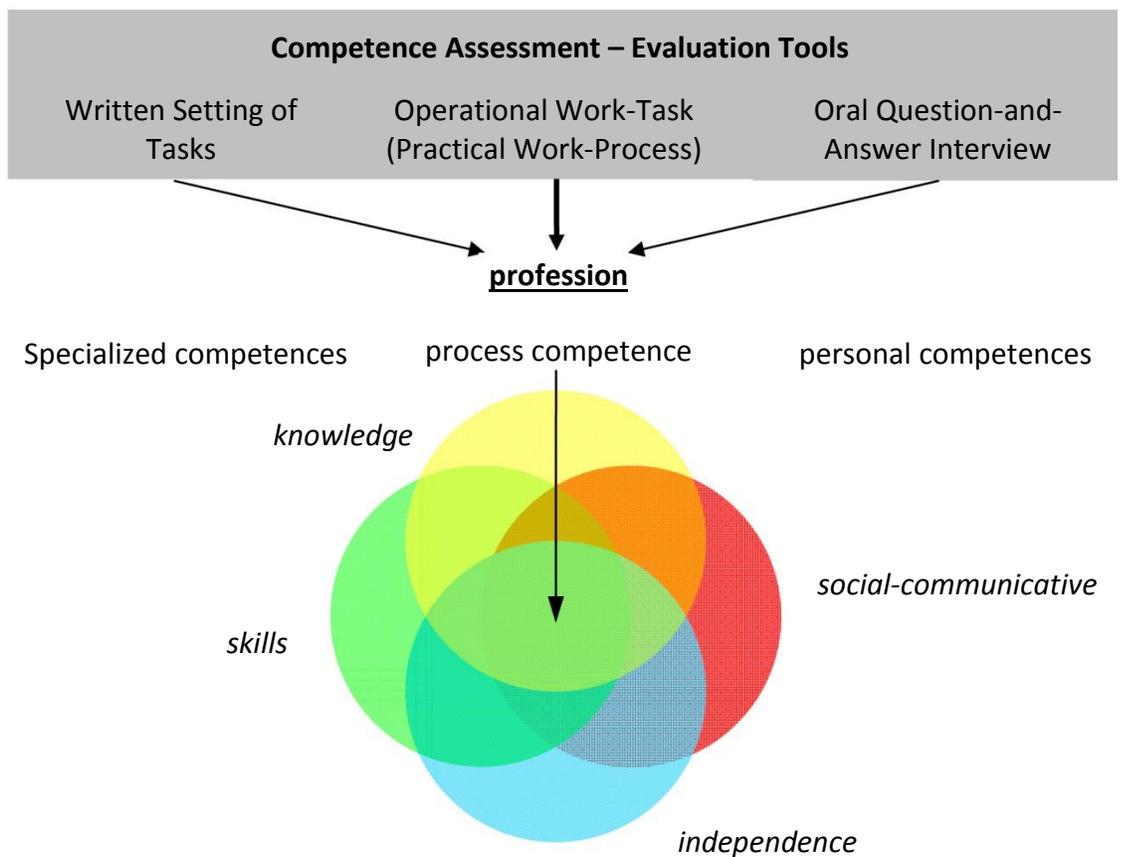
For all the learning outcomes developed within the EDGE project there is to be proven the capability for independent planning, execution, and checking of the work executed, as well as for action in an operational context, all on a level appropriate to the stage of training achieved (process competence). This can be guaranteed via the three elements of competence-

establishment (written, practical, oral). The scope of the application of these different methods, and the proportion and relation between them, will depend on how the persons concerned choose to structure and design the particular learning outcome concerned.

Sketch of Appropriate Evaluation Tools

Written Setting of Tasks

Short Answer-Tasks

One recommended method for establishing competences in the most objective and cost-effective way possible is the setting of tasks requiring short answers. Such short-answer tests can be designed in such a way as to produce highly informative results, namely where special attention is paid to keeping the questions close to actual professional practice and where documents and materials regularly used in operational and practical activities are drawn into the evaluation process. Such short-answer tests can be checked for correctness in an entirely unequivocal way against appropriate specifications or terms of reference. To be applied as supplement to these are tasks posed in the form of open complexes of questions, so as to be able to better reflect process competence.

The participating trade schools / vocational schools (*Berufsschulen*) will be in a position here to make available appropriate sets of tasks to pose.

Practical

Operational Work-Task – Practical Work-Process

The observation of a work-process typical for the profession concerned, or of relevant parts thereof, is always the most appropriate testing method in the case where similar work-operations, such as supervision, maintenance or repair tasks, actually do occur. Evaluation is carried out here with the aid of an evaluation form allowing for differentiation between various aspects (e.g. evaluation of the project plan, documentation by the trainee, planning of work, selection and mastery of the procedures and methods involved, responsibility for one's own work, ability to work in a team, among other things).

The practical work (result / process) is documented by the trainee him- or herself, using paper-work normally used within the work-operational context concerned. This documentation then becomes a factor contributing to the evaluation and forms the basis for the oral question-and-answer interview.

Oral

Oral Question-and-Answer Interview

In an interview consisting of several phases and conducted according to the Behavioural Event Interview (BEI) model, discussion is engaged about specialized professional questions, work-tasks, operational processes, work-planning etc. The subject made thematic is that of practical work-tasks. Evaluation is then carried out on the basis of the correctness or otherwise, in terms of specialized professional standards, of the statements made, as well as on the basis of the understanding shown by the trainee of connections and contexts. This oral question-and-answer interview can be carried out either one-to-one or in a group.