# Competencies as Building Blocks for Integrating Assessment with Instruction in Vocational Education: a case from The Netherlands

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ABSTRACT    *Changes in the system of vocational education, at least in The Netherlands, are based on the idea that the curriculum should focus more on competencies and work-related experiences. In a competency-based curriculum the content is not the central issue but the assessment and monitoring of what is learned and acquired relevant to (later) successful performance. Therefore, it is essential to link assessment with instruction that is focused on performance and aligned with later work. In this paper a framework is developed showing how to organise curriculum and instruction around competencies in vocational education. As an example, the Educational Assessment and Development system is introduced to highlight procedures and experiences of the integration of assessment with instruction in an institute for vocational education and to draw some lessons from this case for future design and construction of curricula.*

## The Changing Landscape of Vocational Education and Training in The Netherlands

The last 10 years have witnessed a profound change in vocational education in the Netherlands. The central focus has been to modernise education and to enhance its attractiveness. In the establishment of large regional institutions of vocational education, called ROC's, the main objectives were the use of the benefits of information technology, better links between educational programmes and work performance and a readiness to incorporate developments in the market-place. From the outset, it was recognised that professional workers constitute the main work-force and are the prime engine for national economic productivity. Therefore, it was felt necessary to revitalise vocational education by issuing several initiatives, specifically through partnerships that were to be

built with organisations and corporate enterprises in order to establish a new qualifications structure for vocational education. Schools were to be redesigned as workplace environments and as places of lifelong learning. The actual involvement of corporate enterprises and industries in education was to be enhanced in order to assure a better transition from school to work. Among the central aims were the development of a personal labour identity and promotion of job mobility.

Concomitant to these changes, vocational education and training in The Netherlands became more and more characterised by programmes and curricula focusing on the competencies needed for successful job performance. Efforts were made to link practice learning with work and the design of powerful learning arrangements with the aid of new information and communication technology or ICT. New in this respect was the establishment of dual learning programmes, and opening schools and programmes to outside expertise. Concomitant to these changes was an enlargement and redefinition of the organisational scale of educational institutions. In addition, more opportunities for exchange, cooperation and further learning were noticeable and strived at in vocational education institutions.

These developments are, by no means, completed yet nor without debate. At the level of educational institutions, fine-tuning and matching of needs to demands are present at all levels of the innovations. In particular, the most central one probably is the rearrangement of curriculum and assessment to comply with the required competencies in the labour market.

## The Transition from a Subject Matter-based Curriculum to a Competency-based Curriculum

The changes in the system for vocational education are based on the idea that the curriculum should focus more on competencies such as learning to learn, interactive skills, communication skills, information processing, problem-solving and reflective skills. Developing broad professional skills must be regarded as the ultimate aim of vocational and company training as well as learning on the job (Onstenk, 1997). These skills act as prerequisites to participate in a society where physical labour and routine tasks are gradually being replaced by information and knowledge as the most important value added processes.

This shift in the importance of the content of a curriculum is based on a fundamental redefinition of knowledge at school (Becker & Steele, 1995; Drucker, 1993). The classical aim of the school to convey from one generation to another knowledge as a precious, objective product has been abandoned (Onstenk, 1997). In the knowledge society, however, there is a need for a type of knowledge that takes the form of a personal competencies, i.e. the ability to identify and solve new problems tomorrow that we do not know of today. The assumption that knowledge is a subjective skill, that one cannot convey, but that has to be acquired by every individual anew, underpins the search for a competency-based curriculum. In a competency-based curriculum, the content is not the central issue, but the assessment of the acquired skills. How can the student prove that he or she has developed the competencies that are needed to perform and to survive in a rapidly changing labour market?

The discussions about what are relevant competencies in a knowledge society are very lively and often polemic. It will be extremely difficult but essential for (vocational) education to define the competencies that contribute to the employability of young people and that help to reduce the insecurity in an unstable risk society. In The

Netherlands, for instance, the debate on the poorly developed historical consciousness of the students and their lack of ready knowledge of dates, caused strong opposition to a more competency-based curriculum. In fact, the debate showed that the described transformation in the education system is still in an initial phase of discovering what the competencies are that really matter, and who is going to decide what they are? The consequences and impact of a competence-based curriculum in vocational education have only just begun to be fully realised.

Adoption of a competency-oriented approach to learning and work, no doubt, leads to a situation in which schools for vocational education and training are increasingly being put in a position where they are asked to tune their 'primary process' to work-related competencies, and the educational and training needs that arise from them (Becker & Steele, 1995; Berryman, 1993). They can no longer offer a fixed, standardised body of knowledge, but have to develop 'tailor made' courses in cooperation with external organisations and outside employers, i.e. the market (Engeström, 1996). To be able to do so, schools have to reorganise themselves and find ways of collecting relevant information in order to rearrange their curricula and assessment of outcomes. In our view, it means they have to meet at least the following requirements in order to become competency-oriented. First, they have to be *student-directed* which entails adding flexibility (i.e. modularisation) to the courses. Second, work- or *competency-oriented programmes* have to be developed and offered. Third, schools have to differentiate their courses towards specific *target* (i.e. work-domain) *groups*. Fourth, coherence has to be organised between the *various learning routes* in the system of vocational education and training. Finally, a differentiated instructional and evaluation or *assessment approach* has to be developed.

It is this last requirement which could prove to be the touchstone for the success of the introduction of competence-based curricula in vocational education. Assessment could 'prove' the better preparation of students for later work through competence-based curricula. Assessment could also indicate whether more student directed and practice orientated learning does in fact occur. However, competence-based curricula require adapted and suitable assessment approaches suited for competence-based curricula that are specifically tuned to evaluate competencies and not content *per se*. Therefore, it is essential to design and establish ways of integrating assessment with instruction in vocational education and evaluate their utilisation in institutions. In this respect, EDAS could provide a relevant case.

## The Educational Development and Assessment System (EDAS)

In March 1997, the Educational Development and Assessment System (EDAS) system was launched at the Enschede Institute for Higher Education for Small Business and Retail Management. EDAS was designed to link the competence-based curriculum with a new approach to assessment in order to achieve a better match between student learning and the goals and competencies to be attained. EDAS reverses the traditional focus on learning objectives and instead focuses on monitoring student learning progress and is meant to consolidate the close connection between evaluation/assessment and instruction. The term 'development' is meant to strengthen the following: the curriculum is governed by the view that education is 'only' a supporting element in the growth of the student towards acquiring the competencies needed in the labour market. Competence-based learning is the central objective of the curriculum and is coupled with the evaluation perspective of continuous monitoring of student learning in order to evaluate

the acquisition of relevant competencies. A strong feature of the EDAS system is that high value is placed on the self-responsibility of the student for his or her own learning.

EDAS implies a major change in our thinking of assessment, in the instructional interaction between students and their teachers as well as in the actual delivery of the curriculum. In evaluating this new approach to assessment, one needs to be reminded of the complex and provisional nature of this integrated evaluation approach to link assessment with instruction.

## Assessment Notions Behind EDAS

In the debate on authentic or direct assessment (Messick, 1994; Wiggins, 1989) considerable attention has been given to the validity of new types of assessment. A frequently offered critique on alternative assessment is that, in essence, it does not significantly differ from traditional testing, it is not yet profoundly underpinned by empirical validation studies, and weaker criteria are being used to prove its reliability (Frederiksen & Collins, 1989; Moss, 1995). On the other hand, the discussion in the evaluation literature (Delandshere & Petrovsky, 1998; Moerkerke, 1996) shows widespread agreement in their discontent with traditional ways of monitoring learning progress, especially with regard to establishing growth in student performance. There is a growing accordance that assessment of performance will be needed that can inform the student as well as the institution about mastery in competence, not only in how far educational goals are attained but also how individual and personal targets are achieved. Central to this shift in thinking about assessment is the question of how evaluation of learning progress can be connected to steering and redirecting a student's future learning and competence development. The call for new assessment tools is closely linked to the need for more self-directed and self-regulated learning which is in line with an interest in a more student-centred curriculum. In particular, it has been asked (Linn *et al.*, 1991, Swanson *et al.*, 1995) how assessment and development can be better matched, that is, in what ways assessment can be used to evaluate progress in competence learning of students which entails a diagnostic and adaptive mode of informing them about suitable learning routes for different learning goals.

These discussions imply scrutiny in procedures and instruments of assessment together with innovative approaches with regard to tools and processes that will be needed to monitor student progress in acquiring competence. The construction of EDAS was meant to offer some solutions and keys for linking assessment to instruction. From the outset it was intended to provide an evaluation of students' learning results that was to be: (1) individual and student-directed; (2) maintained over extensive periods of learning and competence development, i.e. not course bound; (3) focused on learning progress toward selected and individual competencies; and (4) performance-based, i.e. focused on the behaviour of students and to give proof of their mastery. In more detail, the following considerations were present in the construction of EDAS.

*(1) Assessment for development.* Performance assessment provides feedback and it is through functional feedback that students learn and develop their competencies (Butler & Winne, 1995). To effectively support students as learners means moving beyond the simple measurement of the impact of what has been learned to assessment approaches that can anticipate competence levels and monitor the learner's progress during the course of competence development. With assessment viewed as the supporting of learners this means providing the opportunity to give insight into current or actual levels

of performance as well as into the learner's potential to achieve targeted performance (Haertel, 1990). Suitable performance assessment instruments can contribute greatly to this knowledge by effectively providing functional and valid feedback, assessing the learning process as well as the products.

*(2) Competence-based learning and self-regulated learning.* It is the learner who creates value-added solutions to his or her competence profile. It is, therefore, only natural that a student have responsibility for his or her own development. This offers opportunities for self-regulated learning in which people are in charge of the goals and strategies of their own learning (Fisher & King, 1995; Olson, 1991). Establishing strengths and weaknesses in existing competencies or defining learning needs have often been viewed from a teachers' perspective. In a self-directed view on learning, education and training are looked upon through the eyes of the person who receives support and feedback while developing competence. Training and development become embedded in a careful monitoring and assessment of performance (Peterson, 1995).

Providing relevant learning opportunities essentially means first choosing interventions that are based upon careful diagnosis and monitoring of competencies (Redman, 1994).

*(3) Integrative approaches to assessing competence.* Given the above-mentioned ideas with regard to a learner-oriented assessment and evaluation, there is a strong need for instruments that can build an integration between assessment and interventions for performance improvement. As is evident from new insights into performance-based assessment (Haertel, 1990; Herman & Winters, 1994; Peterson, 1995; Wiggins, 1989), information that can be used for evaluation must be extracted from direct and authentic (i.e. work-related) activities, and simultaneously must provide cues for further specific training or development activities. An integrated approach of assessment instruments must be suited to monitoring performance improvement relative to the individual's profile, ensuring that training or development is attained complementary to developing the individual's profile. Such an approach was derived from the work of Tillema (1994, 1996, 1998) (see Figure 1 for an outline of the assessment approach).

*(4) Instruments and tools for integrating assessment with development.* Assessment related to development, in our view, should reflect four main conceptions about authentic assessment (Wiggins, 1993):

(1)  it helps the person to *monitor* his or her own development, and feedback can be given on a continuous basis (Butler & Winne, 1996). A learning dialogue needs to be developed;
(2)  it reveals or highlights a *discrepancy* between self-perceptions or self-assessments and external information about a person's competence (Haertel, 1990);
(3)  it is the person instead of the institute who should profit from this information (*self-responsibility*) and who should be able to utilise it for increased awareness (Redman, 1995);
(4)  it reflects the competence acquired, i.e. the performance itself, in the sense that process as well as products are documented (Landy & Farr, 1983).

To substantiate these conceptions, the EDAS system includes the following instruments:

• the portfolio as a dossier giving proof of a person's mastery;
• the development centre as a set of work-related simulation exercises;
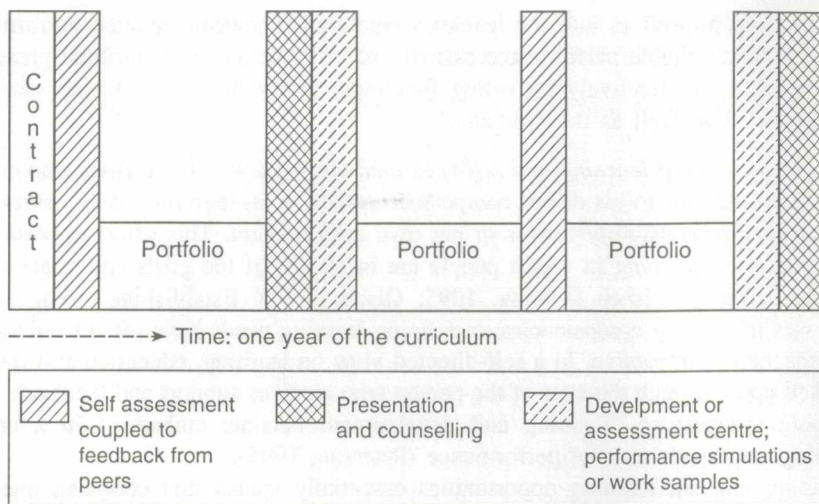• self- and peer assessment as the perceptual discrepancy with a person's environment.

FIG. 1. Assessment instruments used in an integrated assessment procedure.

*Notes:*
SA   = self-assessment coupled to feedback from peers.
P&C = Presentation and counselling.
DC   = Development or assessment centre; performance simulations or work samples.

A portfolio is a purposeful collection of learning examples collected over a period of time (Smith, 1997), and gives visible and detailed evidence of a person's competence. It serves as a tool to highlight progression in competence development under the control and responsibility of the person involved.

The development centre is a deliberately construed environment in which several simulation/work-related exercises are given to test specific competence attainment on a more detailed level. The assessment centre method is used to construct specially designed practice assignments to test these competencies.

Self-assessment and peer assessment serve as reflective tools for a person to elaborate on their own strengths and weaknesses as mirrored by the perceptions of others, thus establishing a baseline reference point for the person to which the collected assessment information (i.e. in the portfolio and development centre) will be related.

In particular, the combination of portfolio with development centre can prove to be a strong device to monitor and test performance growth over longer periods of time while at the same time offering detailed information with regard to specifically selected competencies.

## Introduction of EDAS in the Educational Institution

Worries and a lack of belief in the success of the traditional educational setting in which students work and that they are primarily interested in 'making the grade' have been the major impetuses for the creation of a system that is different to what is encountered in most institutions for Higher Vocational Education in the Netherlands. EDAS aims at focusing on competencies for later performance and presenting it at the centre of teaching and learning to give the student more responsibility for competence development. Education, i.e. the curriculum, is a road or instrument to attaining these competencies. Giving competence development back to the students actually means giving them

the opportunity to monitor and highlight their performance more concretely. To achieve this EDAS entails the following elements:

- Student learning and the acquisition of competencies is at the centre of the programme. Essentially this means there is no formal laid-out plan of courses to be attended in succession. Instead, students are grouped into mini enterprises with their own business targets and task definitions. In order to achieve their own (business) aims, students formulate their own learning goals and subsequent demands for instruction and guidance.
- Assessment monitors instructional/learning progress. Throughout their learning route, students actively produce all kinds of artefacts and materials (i.e. a business plan, mission statements, task analysis, marketing results, logistical and financial outcomes) that can be evaluated and coached by their teachers.
- Competencies are derived from qualification profiles extracted from outside the educational institution and are guides for curriculum construction.

  The vocational curriculum programme is meant to address competencies that are central to later performance. For this reason, an extensive survey in the field of retail management and small business was conducted prior to establishment of the programme, in which detailed descriptions were collected about successful performances of those active as managers and entrepreneurs. These descriptions acted as settings for the arrangement of instruction as well as criteria for assessment.
- Teachers are facilitators and monitors of instruction.

  In essence, the students are the ones who direct the course of the curriculum; it is not the teacher who initiates and delivers content. Although this can be highly confusing, it certainly addresses the new role of teachers in a competence-based curriculum in which successful later performance and student growth define what is done. Self-management and being knowledge productive have been assumed to be the major assets of this new student who takes an interest in lifelong development. The vocational curriculum, therefore, places high interest in competencies like problem-solving, self-regulation, reflection, emotional awareness and stress resistance in people in order to cope with the rapidly changing demands of the labour market. This implies that not only should the educational and instructional system mirror these changes better by focusing on work-related competence and relating learning processes to it, but also that it brings the workplace closer to the school and facilitates and stimulates students to learn (Engeström, 1996).

EDAS fits in this development by helping the student to gain insightful information on the progress being made toward the competencies to be attained and by assessing multifaceted learning experiences (not only knowledge and skills but also perspectives, orientations and experiential learning) in complex and work-related settings. In this sense the EDAS system is prospective in that it focuses on the students' potential and urges further developments and investment in learning, to balance one's strengths and weaknesses.

## Building Blocks of the EDAS System

### Defining Competencies

One of the hallmarks of the EDAS system is the way in which relevant competencies are selected and defined. In order to arrive at a balanced set of competencies, a so called

'Wisdom of Practice' study (Mroseck, 1996) was conducted in which, through a process of dialogue with retail managers and small business entrepreneurs, and frequent exchanges with the teaching staff, a careful selection was made of competence domains and dimensions of work. These domains contain areas of work for the future manager in small business and retail management, and as such 18 domains, later summarised into seven, were identified: Entrepreneurial lifestyle; Relation with environment; Organising the business; Organisation development; Relation management; Being an individual entrepreneur and Learning to learn (modified after Gibb, 1998).

For each domain the Wisdom of Practice study engages in an extensive in-depth analysis with relevant persons in that domain to highlight the work-related performance which identifies the proficient person in that domain. These persons (all experienced actors in the field) supply the necessary information on relevant performances and indicate the standards by which these performances can be judged or evaluated. As a result, levels and instances of successful performance could be identified for each competence selected in a domain. As a further step in the Wisdom of Practice study, these performances are related to relevant standards to identify proficient behaviour, i.e. each performance is coupled with relevant assessment situations. Based on this information it then becomes possible to describe a competence in performance terms and indicate the levels and assessment standards.

As a final step in the Wisdom of Practice study, the teachers in the programme identify relevant curriculum contents that could accompany these competencies and which are attached as a 'learning packages' to these competencies. Eventually each competence is described in terms of: (1) a setting or situation in which relevant behaviour is to be demonstrated; (2) the actual performance to be shown described in behavioural terms; (3) the standards by which it is assessed, indicated by attainment levels in order to highlight the development or growth needed to acquire the highest standard.

*Constructing Assessments*

From the perspective of students, the assessment and development linkage is primarily organised around the portfolio as an instrument which, in the hands of the student, should crystallise and demonstrate one's accomplishments. Following the format outlined by Tillema (1998) the portfolio is regarded as a reflective learning tool in which evidence of attained performance (be it a piece of work, a product made, or an outcome of a process the student was involved in) is being reflected upon and which indicates further learning needs. The reflection process is guided by the initial self-assessment in which the student indicates the goals he or she hopes to attain and the perceived levels of proficiency. Relative to his or her own perceptions on accomplishment, the attained level of performance as evidenced by the portfolio are taken as input for the discussions when the student brings the portfolio to the mentor. As an outcome of discussions in the mentor meeting, it may be decided to collect further additional information in the 'development centre' as an assessment intervention which is to be held twice a year. In the development centre, central competencies are assessed as well as competencies that are of special relevance to the student given his or her previous accomplishments as evidenced in the portfolio.

In EDAS, teachers are responsible for the constructions of relevant exercises in the development centre. From the outcomes of the Wisdom of Practice study, several

indications can be derived about possibly relevant assessments. However, it remains the educational responsibility of the staff to translate this into crucial tests. All practice assignments are derived from work-related problems or situations that have been collected over time by teachers and as such mirror the experiences and contacts teachers have in the field in which they teach. The assessments are thus expected to change or adapt according to the teachers' knowledge of the competencies needed in the labour market.

As an overview, the individual student may experience the assessment approach as follows (see also Figure 1):

(1) A self-assessment is made with respect to one's mastery expectation with respect to the selected competencies,
(2) The self-assessment is confronted with data from a peer assessment or environmental survey to establish personal as well as institutional goals for learning and development;
(3) A portfolio construction is undertaken to collect evaluation materials on each competence.
(4) The portfolio is offered for evaluation and counselling from which new directions for learning can be established
(5) The student presents him or herself for conclusive testing in the development centre to show mastery on a number of selected assignments, after which the whole process may start again.

*Managing the Process*

In the organisation of the Small Business educational programme the traditional teaching sections and staff organised by subject disciplines were abandoned in favour of a cohort-like organisation of teachers (just as students were organised in cohorts). Each staff cohort team is responsible for the curriculum of their respective student cohort throughout the whole four-year programme, i.e. meaning the teachers were coaching and 'delivering' all the subject areas of the curriculum. The communication and learning about EDAS was organised by each staff team as they were responsible for the programme delivery, including the assessment approach. This also meant that each staff team initially found their own solutions and were working with their own approaches to implementing EDAS. Coordination and support was offered through a monthly collaborative lunch meeting between all staff cohorts, called the 'EDAS sandwich meeting'. In these meetings, each staff cohort briefed the others about their developments and entered into discussion about the most feasible implementation of the assessment approach. There was a learning trade off from the start of the first cohort in 1997 since they could inform the others who were still in a planning phase about their actual experiences and findings. The EDAS sandwich meetings proved to be a vital connection between the ideas and concepts, and the actual implementation practices. This inevitably has led to alterations and even deviations from the original proposed EDAS ideas but also tailored the assessment approach to the actual instruction process as it is being conducted in a cohort. These alterations, however, are discussed intensively and amended accordingly. This is taken to be acceptable given the view that teachers as well as their students are the prime owners of their instructional process and managers of their own learning. As such, they have primary responsibility for implementation and successful adoption of the ideas put forward by the EDAS project.

## Lessons and Experiences

Construction and implementation of a system for assessment and evaluation alongside a renewal of the curriculum at an institute for vocational education are no doubt time-consuming and often cumbersome processes in which, depending on situational constraints it remains difficult to maintain scrutiny in evaluation and analysis. Nevertheless, it was attempted during construction and implementation of EDAS to check on the main problems and solutions. A book of questions was maintained in which experiences and lessons learnt were collected. The book was organised around the central question: in what way can student progress be monitored and contribute to adaptive learning routes in order to achieve competent performance? Some general findings are of particular relevance with respect to assessment and evaluation.

It proved to be highly difficult to link assessment with development, i.e. instruction. The EDAS concept aimed at an integrated approach to student monitoring which implied: (1) matching of what is accomplished with learning goals and standards of performance; (2) determining individual mastery and accomplishments; (c) determining adaptive learning routes. To realise all these goals a strictly tailored and individualised programme was necessary. The instructional setting in EDAS did not provide for such individual routes, although students learned to use the assessment information provided to them in a constructive way, i.e. learned to formulate their learning needs and did ask for specifically tuned instruction from their teachers. In this respect it showed that during the years of EDAS implementation (from 1997 onwards) a development in thinking occurred about competence-based education. It gradually became increasingly clear to all involved (teachers, students, school management) that the curriculum is primarily just a vehicle for acquiring competence and not an end in itself, often intentional but not always; often providing the main road but not always, and often valid for most of those concerned but not always. Central to a competence-based curriculum is the idea that programmes should provide a breeding ground and learning environment for growth in competence. This requires a clear shift in dominant thinking within most educational institutions. For instance, when an educational institution recommends itself as competence-oriented it has to accept flexibility in many aspects: programme delivery; student adaptability, staff organisation, and most of all openness to external influences (i.e. the world of work). Apparently, this understanding only gradually penetrates. To distance one's self from course-based teaching apparently is a huge step for educational institutions.

Another aspect of the difficulty of linking assessment with instruction lies in the EDAS concept itself. EDAS promotes self-regulated learning with a high degree of involvement by students, respecting their choices and demands for instruction. Although this makes it practically impossible to revert to traditional testing, the alternative tools, i.e. portfolio, self-assessment, and development centre, fitted in extremely well with this approach. In particular, the portfolio has been regarded as an informative tool for learning by giving opportunities for asking and giving detailed feedback. It enables the student to collect evidence of mastery which was found to be very rewarding, assuring and informative, while teachers felt confident they could 'control' the direction of learning taking place. A strongly self-regulated learning programme like EDAS requires not so much assessment of content but instead assessment of accomplishments. In this respect the linkage of the assessment approach to competencies as external references of performance is crucial.

As to the validity of the EDAS assessment approach only a few general observations

can be made, given the stage of implementation of EDAS. The linkage of assessment to competencies certainly enhances content validity. Regarding the curriculum as a vehicle for moving towards competence attainment means opening up educational programmes for representative tasks and content, which has always been a key argument in the debate on authentic assessment. In a predictive sense, validity of assessments could be derived from student evaluations of the assessment tools, which were quite favourable, indicating that students regarded the assessment feedback information as being relevant to their performance and a direct measure of their accomplishment. If plausibility is an indicator of validity (Delandshere & Petrovsky, 1998; Linn *et al.*, 1991) the assessment results were of a high quality in the opinions of those concerned, but more conclusive research is needed here.

In more detail, the assessment and evaluation practice within EDAS revealed several areas of interest to a discussion on competence-based curriculum and assessment:

(1) The establishment of relevant competencies for development and learning in an occupational domain, i.e. identifying competencies that are of direct concern for future performance, can indeed constitute targets for an educational programme. However, educationally relevant as well as domain-related, i.e. work-related, competencies are difficult to formulate. A discussion is needed between the world of work, i.e. the organisations and corporations constituting the domain, and education practitioners in order to find a common ground. The Wisdom of Practice study as was conducted in EDAS formed a sensitive bottom-up approach which enabled us to listen to the 'voice' of practice while at the same time balancing it with teachers' expertise about the feasibility of developing competencies.

(2) Formulating levels and standards of performance are not only a matter of complying or meeting external requirements (exams, inspectorate) but they also need to express the institutions' own profile of excellence and quality. EDAS promotes the setting of standards to certain levels so a particular programme can distinguish itself from others. This calls on the one hand for mutual agreement between institutions for vocational education about selection and definition of competencies in a domain, whilst on the other hand it requires differentiation, and sometimes even bifurcation, among these institutions. This process of defining the mission in terms of competence profiles is quite new to institutions in vocational education that were more prone to anonymity than to distinction. A management team capable of leading the staff and able to clarify its success standards strongly facilitates the endeavour toward change and resetting boundaries.

(3) The collection of relevant information for assessment lies in the interplay between learners and teachers. The work-related experiences of students and their growth in competence development as produced by the EDAS programme puts new demands on what is to be assessed and the way in which it is assessed. Questions, e.g. what is relevant evidence? who decides about inclusion of performance and how do we integrate performance evidence? (i.e. in work samples) whose perceptions count in order to arrive at a meaningful and coherent picture of development or growth? are all crucial and need to be discussed in a team. The construction of cooperating teams of teachers in cohorts proved to be an important condition for success, although it also gives rise to different solutions.

(4) The embedding of assessment as measurement in a developmental, i.e. learning, context calls for new tools. Assessment is only complete after a process of deliberation and reflection. This process of educational reasoning and decision-

making as was envisaged by EDAS may be severely hampered and may even become seriously flawed if it is merely regarded as information collection. In a developmental-oriented assessment the viewpoints of the self-regulated learner as well as the qualifying 'system' that has to comply with external requirements or standards have to be reconciled. This means that standards govern the process.

(5) Sustainment of an integrated approach to assessment calls for a balanced system with multiple instruments, capable of giving a detailed, i.e. monitored, picture of growth in competencies. EDAS showed there is not one single assessment instrument that can do the job alone—an interconnected programme of measurement instruments addressing different functions is needed. Portfolios stress individual commitment and strong involvement in monitoring one's development. Work samples satisfy the need for more direct performance-related evidence while development centres open the possibility for specially constructed simulations of performance to show excellence. This 'balanced' system can only be maintained with sufficient care and attention for procedures, clear guidelines and well-established rules of conduct.

(6) Participation of students in their assessment for development is not self-evident or can be taken for granted, as was clearly delineated by the students in EDAS. Fear of under-achieving, possibly hyperinflation of evidence, and ignorance about standards all lead unduly to a collection of inauthentic and invalid information. Portfolio construction in itself is a lengthy process and is highly dependent on what the work environment offers. Students, therefore, need to be motivated and instructed to use the instruments and engage in self-reflective activities about their learning ('learning to learn' as a condition). It proves that students are not necessarily convinced of their self-regulative role in instruction.

(7) The internal organisation of the curriculum has to support procedures for collecting information as well as transforming them into development or further learning. The assessment information EDAS provides needs to be evaluated and properly discussed in order to point out profitable roads for further development, resulting in adaptive learning tracks and putting a flexible demand on the curriculum. Teachers and students together need to be prepared to enter into a debate on the evaluation of progress and its consequences for learning. For teachers as mentors and coaches this means not to fall back on regular solutions and options already provided but supporting their learners in an adaptive way. For students it means taking a stance as a learner with high responsibility for self-success.

(8) Maintaining a coherent programme and staff. Every innovation call for breaking down existing strategies and epistemologies of practice. Some people seem to flourish in such an environment which brings out the best in them, but a lack of programme coherence and structure can backfire on the implemented changes at some later date. The acquisition of knowledge in an organisation and especially in teams of teachers needs vehicles for change and criteria for success in order to 'route' the innovation. This involves making explicit and recognising tacit theories in use. In this respect the EDAS sandwich meetings form a crucial element in explicating this knowledge and promote team learning.

EDAS clearly shows the interconnections between evaluation and assessment and the curriculum and attainment of competencies. Teachers play a crucial role in this link because of their expertise in 'content' and 'delivery'. However, they may also endanger a successful link because a teacher's outlook on competencies and ability to frame

competencies in the format of the curriculum requires a new perspective and special attention to the outcomes of education, while at the same time it places new demands on the ability of teachers and staff to incorporate the world of work into their teaching programmes. Teachers can be given substantial help by providing them with the necessary tools that go along with the new thinking about incorporating competencies in the curriculum. Valid assessment procedures and evaluation arrangements open up new horizons in discussing and exploring solutions in the teacher's own work.

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