

**Investigating competence-based VET in The Netherlands: backgrounds, pitfalls and implications**

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***Abstract***

In the Dutch VET system, competence-based education is the leading paradigm for innovation both on systems' level and on the level of teaching and learning arrangements. This phenomenon was the impetus for organising a scientific conference in October 2002, under the umbrella of the Dutch Educational Research Association (VOR), to bring to the fore a diversity of results of educational research related to competence-based VET. This paper provides an analysis of the competence concept and its popularity and an internationally embedded historical analysis of the development of competence-based education. Moreover, based on the presentations of the October conference, (possible) pitfalls and roads for future development will be sketched.

***Introduction***

In the Dutch Vocational Education and Training (VET) system, competence-based education is the leading paradigm for innovation both on systems level as well as on the level of teaching and learning arrangements: the competence concept has become very popular, both at the level of policy making and at the level of designing and implementing vocational education (see also Van Merriënboer, Van der Klink & Hendriks, 2002). For example, in Dutch secondary vocational education, job competence profiles are being developed that should serve as a basis for competence-based education. In higher vocational education, many educational programs can already be described as competence-based (Mulder, 2003). The main reason for the popularity of the competence concept is the expectation held by many stakeholders in the VET field that the gap between labour market and education can (and will) be reduced through competence-based education. The underlying idea is that vocational education should enable students to acquire the competencies needed in their future professions (and in society as a whole). Additionally, while working as a professional, they should continue to develop their competencies to be able to react and anticipate to future developments in their work (and outside) (Jenewein, Knauth & Zülch, 2002). In this respect, lifelong learning can be considered as a continuous, stimulating and supporting process, initiated in regular education, supporting the needs, possibilities, and experiences of persons and organisations, to develop the ability to acquire competencies necessary for personal development and professional functioning in the own organisation and the rapid changing society (Lans, Wesselink, Biemans & Mulder, under review).

In Dutch VET research, the notion of competence-based education receives a lot of attention as well (see e.g. Van Merriënboer, Van der Klink & Hendriks, 2002). For the year 2003, the Dutch Programme Board for Educational Research formulated the following main question to be examined in VET research: How occur processes of competence development in learning environments in vocational education, how can these processes be conceptualised and explained, which factors have a direct influence on these processes, and how can competence development processes be optimised? This main question refers to three different themes that are all related to processes of competence development and determining factors of such processes: 1) learner characteristics and competence development; 2) design of learning programs and environments; and 3) the role of teachers and supervisors of practical internships in the learning environment. Research on competence-based assessment can be integrated in each of these themes (PROO, 2002).

These trends in VET practice and research were the impetus for organising a scientific conference in October 2002, under the umbrella of the Dutch Educational Research Association (VOR), to bring to the fore a diversity of results of educational research related to competence-based VET. Researchers from different traditions presented state of the art overviews on Dutch research: psychology, pedagogy, sociology and economics, all were present at the VOR-Conference. This paper provides an overview of the results and a critical reflection on the usefulness of the competence movement for the development of Dutch VET.

The paper starts with an exploration of the competence concept to shed light on the attractiveness of competence-based education both in educational politics as well as in educational practice of Dutch VET. This analysis will be embedded internationally, by comparisons with developments in the Anglo-Saxon and German VET systems.

In the next section, the core concepts and prejudices of the competence movement are analysed. Main issues are work-related learning; the learning potential of the workplace; motivational aspects and attractiveness of CBE; learning potential and capacity for self steered learning of students; forward and backward mapping of learning trajectories; assessment of prior learning and the socio-economic role of school-based and work-based VET. For this analysis, the presentations of the October-conference will be major input. By that, this section will give an overview of Dutch educational research related to the field of VET. Based on this analysis, pitfalls and roads for future development will be sketched.

In the final section, some conclusions and implications will be formulated on the relations between policy, practice and research. In order to develop flexible VET systems, ready for the emerging knowledge-based economy, a learning policy connecting governance, practice and research will turn out to be the most fruitful way.

### *Exploring the competence concept*

The competence concept has a rather long history in education and training research and practice. The interest for competence-based training was raised because of various publications on competence-based organisational training and competence-based teacher training in the United States. This so-called "competency movement" (see e.g. Friedlander, 1996; Lucia & Lepsinger, 1999; McAshan, 1979; Parry, 1998) was characterised by detailed analysis of the various behavioural aspects of professional tasks. In other words, tasks of professionals were dissected in the particular composing parts, resulting in long lists of fragmented behavioural elements. This approach turned out to be unfruitful, which resulted in decreasing attention for the original competency movement (Mulder, 2003).

Nowadays, the interpretation of the concept competence is much more holistic: the notion of competencies as integrated abilities has become very popular. Based on many studies on competence development, however, the conclusion can be drawn that the concepts competence and competence-based education are still very diffuse and require a clear definition and conceptualisation. Taking this into consideration, it would not be prudent to present a fixed definition of the terms competencies and competence, but rather to adopt a working definition from which to proceed. Hereby the following points of departure are of importance (Mulder, 2001, p. 151-152):

1. Competencies are capabilities, capacities or potentials and can be understood as characteristics of persons, teams, work units or organisations which enable them to attain desired achievements;
2. Competencies comprise of integrated meaningful clusters of knowledge, skills and attitudes;
3. They form a necessary condition for reaching an achievement (having leadership qualities and putting them into everyday practice are two different matters), for example, carrying out duties, even in an ill-structured and constantly changing environment; solving problems, executing a job, obtaining a certain result, making decisions and taking responsibility;
4. Competencies are neither explicitly nor externally obvious; they are abilities which become apparent by a certain achievement in a specific situation. Levels of competencies in an individual can, therefore, only be inferred by analysing achievement. Initiative, decisiveness and customer friendliness, for example, cannot be determined without observing a person putting them to use in practice or in simulated instances;
5. To a certain extent competencies are portable from one situation to another and are also transferable in that respect;
6. Competencies are concerned with the results and achievements of organisations, work units or individual jobs, in areas, for example, of food safety, purchasing management, marketing management and accounts management;
7. They are apprehended at certain levels and in many cases can be further developed; levels of proficiency which can be differentiated are, for example, advanced starter, competent, proficient and expert (Dreyfus & Dreyfus, 1986);
8. Competencies can be present both in persons and systems, for example, the capabilities of persons and the knowledge that is installed in computer files.

In addition, Mulder (2001) formulated the following working definition for the term competence, taking the opinions of other relevant VET researchers into account: Competence is the capability of a person (or an organisation) to reach specific achievements. Personal competencies comprise: integrated performance oriented capabilities, which consist of clusters of knowledge structures and also cognitive, interactive, affective and where necessary psychomotor capabilities, and attitudes and values, which are conditional for carrying out tasks, solving problems and more generally, effectively functioning in a certain profession, organisation, position or role.

By assignment of the Dutch Programme Board for Educational Research, Van Merriënboer, Van der Klink and Hendriks (2002) carried out a study to determine the possibilities to harmonise the competence concept. Following literature study and expert consultation, they also concluded that many conceptions of competence exist, both in theory and in educational practice. Competence as a concept turned out to be (too) elastic. This raised the following question: what is communal with respect to the competence

concept in various sectors and contexts? They derived 6 common characteristics of competencies, as defined by relevant authors in the field: 1) competencies are context-bound; 2) they are indivisible (knowledge, skills and attitudes are integrated); 3) they are subject to change; 4) they are connected to activities and tasks; 5) learning and development processes are conditional for competencies; and 6) they are interrelated. Therefore, in their opinion, the competence concept has a right to exist, although the relationships with other concepts like key qualifications and expertise can be quite strong.

### *The popularity of the competence concept*

Competence-based education has fast become very popular both in vocational educational practice and in the policy field. Its attractiveness to schools and other VET institutes lies first of all in the emphasis that the concept puts on the positive side of education and learning. Making people competent has a more positive, and also a more practically relevant, connotation than making up for their knowledge deficits. The approach matches well with the culture of advancement and empowerment espoused by many in educational practice. VET teachers also feel that competence-based education, because of its practical relevance, can motivate students to finish their school education to a much larger extent than traditional education can. Moreover, through their direct contacts with work organisations, VET institutes notice immediately how modern companies, occupations and jobs are changing, urging schools to deliver graduates with broad skills on top of specified knowledge.

The main reason why competence-based education has gained so much popularity in the VET policy arena is its alleged capacity to reduce the gap between the school system and the labour market. It is believed among policy makers that graduates educated under a competence regime will be better able to perform the jobs required by modern organisations than those with traditional qualifications. Also, the notion of competence-based education fits very well within the policy discourses of employability and lifelong learning. Competence systems carry with them the promise of rendering learning processes and outcomes measurable and manageable throughout the life span. On a related note, the competence concept can easily be linked to the performance approach of learning and education made popular by ideas on core competencies of organisations. The latter reason is another example of the perceived potential inherent in the competence concept to bridge the education-work divide.

An interesting phenomenon in the whole competence discussion at the practice and policy level is the tendency to largely ignore the disadvantages that may be associated with it. A major bandwagon effect has been visible among Dutch schools and VET institutes over the last five years, when it comes to shifting to the competence paradigm. From an academic point of view, this is all the more pressing because of the serious lack of scientific research and theory to underpin its claim to fame. What we do know from the earlier competence movement peaking in the 1970s, but also from more recent UK experiences with National Vocational Qualifications and Investors in People programmes, is that the risk of bureaucratisation of an essentially good idea is very real. The question is warranted to what extent competencies are perhaps viewed as a panacea for all problems of an educational and labour market nature. Can one system, whether competence based or not, realistically serve all stakeholders in the practice, policy and political arenas? Can student dropout really be firmly reduced by introducing another educational model? Are the demands that the system makes on some groups of students not too high? Such questions deserve to be asked and answered, but to date they are not very prominent in the competence discussion at the practice and policy level.

A final, rather different take on the popularity of the competence concept revolves around the question to what extent schools are already working according to competence arrangement without referring to it as such. In other words, when does competence-based VET 'officially' become competence-based VET? The lack of a clear definition does not help much in this matter, but it seems that many schools have been

using teaching practices and methods at least compatible with competence-based education for some time already. Notions around self-directed, participatory and project-based learning, for instance, may differ from each other but are similar – and compatible with competence-based education – in that transferring subject matter is no longer their primary concern. Instead, they focus on the way in which learners (co-)construct situated knowledge and learn to learn (collaboratively) by doing so. To a certain extent, therefore, the popularity of the competence approach may be a case of old wine in new bottles.

### *CBE in retrospective*

Competence based education and training has a long history. Achtenhagen & Grubb (2001) trace first task analysis approaches back to Moscow in the 1860's. Victor della Vos developed methods for task analysis, partly based on the conditioning theory of Pavlov, and soon it found its way to the American movements for manual and technical training. Competence based approaches usually start with a task analysis in which jobs are broken down in single tasks, resulting in skill based instruction and training. Also Nijhof (2003) stresses a long history of competence based education, referring to Bobbitt's approach in the 1920's of a scientific analysis of human actions to find underlying abilities needed for high performance. A behaviourist approach for direct translating task descriptions into behavioural attainment targets in the 1960's has led to single S-R responses in programmed instruction chains. Cognitive learning theories replaced these programmed instruction models in the 1970's.

It is interesting to see that the same discussion is repeating in the actual debate. Boreham (2002) argues the CBT model behind the UK NVQ-system being 'mechanistic, reductionist and denying the importance of human agencies in processes of learning'. In the NVQ-system, school based learning is erased because of the claim that any theory taught in college will be inert because active knowledge is necessarily constructed through performance in the workplace. In a Taylorist industrial age this leads to empty skills in a low skilled economy (Payne, 2000). Modularization often goes along with competence based curricula. This reinforces the disintegrative approach for job analysis. The same argument counts for the use of behavioural assessment techniques: these tend to measure only the overt, routine aspects of tasks.

James (2002) states from the Australian scene, that CBT tends to be conservative in nature: it enhances the development of procedural, technical knowers and adaptable workers, in stead of reflective problem solvers and innovators. The cause of this conservatism is the standardisation involved in the curriculum development methods (backward mapping from job requirements to learning trajectories; cf. Den Boer & Nieuwenhuis, 2002).

So, in the Anglo-Saxon literature, competence based education has not an overall positive connotation. A rigid backward mapping approach, in which the state of the art on the shop floor is the untouchable starting point for the definition of occupational competencies leads to routinised job descriptions, in which the proactive and reflective worker is left out (cf. the canonisation process, mentioned by Brown and Duguid, 199..). Achtenhagen & Grubb conclude that CBT is appropriate for a Taylorist world, but is an inadequate preparation for the high skilled workplace, demanding flexibility and problem solving abilities.

In the recent German and Dutch discussions on competence based education, a more holistic approach is plead for, to conquer the risks of the disintegrative approaches. In these discussions, competence is defined as the integrated abilities to cope with complex tasks. Boreham (2002) suggests work process knowledge as an innovative approach, embedding and integrating specific jobs in full production processes. Work process knowledge should enable workers to estimate the meaning of their job in relation to other tasks and jobs. In the recent policy debates on Dutch VET the same holistic approach is seen as a wheelbarrow for educational innovation and the introduction of life long learning. Toolsema (2003) concludes, however, that although the policy device is a holistic approach, the practical design of learning

processes and assessment procedures still use a narrow definition of tasks and competencies. And Kuijpers (2003), in her dissertation based on factor analysis, concludes that competencies do not have a psychometric meaning. Van der Klink (2003) describes the same movement: the holistic approach is often used as window dressing for behaviourist instruction. Van der Klink argues assessment to be the drawback for a holistic CBE approach.

Historically, competence based education is based on a behaviourist model of training and learning, fitting in a Taylorist industrial model. In the recent competence based movement a holistic approach is normatively put forward, but in practice the pitfall of a disintegrative S-R model is still immense. Modularization and assessment techniques are pushing the educational practice back in the traditional mechanistic and reductionist approach. De Jong (2003) argues in his critique on Bastiaens and Martens (2003) that implementing IT tools in vocational education is reinforcing this tendency, by delivering virtual, individual training trajectories. De Jong states that competencies "... should not be acquired, but should be developed in a collective community of practice and knowledge." Competence is becoming a cultural aspect of work.

### **Pitfalls in competence-based VET**

This section presents several (possible) pitfalls in applying competence-based education. These pitfalls are derived from the various presentations held at the conference in October 2002. The overview starts with conceptual and institutional problems, then some technical issues are presented and the section ends with problems in the field of implementation of competence-based education within the context of Dutch VET.

#### *The competence concept*

As shown by Van Merriënboer, Van der Klink & Hendriks (2002; see also Toolsema, 2003), many conceptual definitions of competence and competency can be found. The meaning of these concepts is not agreed upon by many researchers and authors (see also Van der Sanden, De Bruijn & Mulder, 2003). Also in practice, institutional actors and colleges use different descriptions. This serves as an alibi to define competencies as one likes, decreasing the trustfulness of the concept (Mulder, 2000, 2003). According to Nijhof (2003), designing competence-based curricula, learning processes and assessment procedures can only be provided fruitfully, when competence is operationalised in an unambiguous way. Therefore it is necessary to acquire insight in the underlying learning processes (cf. Van der Sanden et al., 2003; Onstenk, 2003 and Simons, 2003). On the other hand, it is important to avoid competence jargon while actually designing and implementing CBE and to choose a rather practical approach (Mulder, 2003). In this respect, a common vision of the desired competencies should be reconstructed in interaction with all actors involved (students, teachers, social partners, government; Simons, 2003).

#### *Standardisation*

A second pitfall is an over-reliance on standardisation of competencies, whereas the power of CBE lies in its context-embeddedness. Usually, working in practice is quite different from how job descriptions and organisational regulations would have it (Klarus, 2003). Using overly standardised competencies is really missing the point, since every abstraction from actual practice makes them less applicable. Related to the problem of standardisation, is the belief in forecasting techniques: competence standards should describe jobs, where students are educated for in the future, but they can only describe jobs from the past (cf. Den Boer & Nieuwenhuis, 2002). Too strict a use of competence standards leads to conservative training, instead of preparing students for innovative developments.

Competencies are more than the sum of their composing parts, so a certain context-independence should be in place. However, the risk of bureaucratisation looms largely when attempts are made to separate the system of (required) competencies from actual work practice. The potential power of working with a concrete set of meaningful competencies will soon be lost as a result (Klarus, 2003).

### *School and workplace learning*

Thirdly, it is often underestimated how hard it is to integrate learning in schools with learning at the workplace (Klarus, 2003). Different actors are involved, speaking different languages, coming from different cultural and historical backgrounds, and pursuing different interests. No wonder, aligning the two different learning systems is so difficult. However, the distinction between the two settings should be reconsidered (Klarus, 2003): in a sense this boundary is artificial, because in the end it is all about individual students, learning in different places at different times, construing and adjusting their mental models of the reality of work. Trying to ensure some form of continuity throughout their learning pathways (e.g. by developing their metacognitive skills) may be easier than solving the integration problem at systems' level.

According to Simons (2003), the implicit character of workplace learning is a major dilemma, that should be taken into account, designing learning arrangements and environments both in schools and on the workplace. Onstenk (2003) is questioning is a new mix of implicit learning, guided learning and self-directed learning needed (cf. Billett, 2002). People should be made aware of their competencies and ways of learning, but in the workplace this takes different approaches than in school settings. Formalising work-based learning for the acquisition of standardised competencies is still an unsolved dilemma in designing effective pathways to becoming competent.

### *Determining learning activities*

Specifying the competencies to be acquired by students does not automatically result in the design of effective learning activities. Planning, designing and implementing effective ways of learning requires specific attention. Many authors in this field argue learning arrangements and pathways should be based on principles of social, constructivist learning (cf. Van der Sanden et al., 2003; Simons, 2003, Mulder 2003). Teachers should work in multi-disciplinary teams to design new competence-oriented learning activities, using existing practical periods and on-the-job training. Translating competence-oriented goals into actual learning activities is crucial in the implementation of CBE. If the implementation gets stuck in the preparation phase and/or not permeates into the execution phase, true innovation will fail. In this respect, students should not only develop work-related competencies, but also learning competence in order to be equipped for life long learning (Mulder, 2003; Van der Sanden et al., 2003).

### *Assessment of competencies*

A fifth pitfall is that assessment of competencies, especially in work situations, is a labour intensive and time-consuming exercise (Jellema, 2003). It is hard to standardise and often involves structured observation rather than classroom examination. Developing and using valid and reliable assessment tools is a crucial but very difficult task. Moreover, the criteria for the quality of assessment become stricter as its importance increases (cf. Nieuwenhuis, Van Berkel, Jellema & Mulder, 2001). For example, if selection or certification rather than self-development is the main goal of assessment, it is even more crucial to use high-quality instruments and tools (cf. Roelofs & Sanders, 2003). Also here the dilemma between national standards for assessment and local flexibility is urgently present (cf. Nieuwenhuis et al., 2001). Since traditional assessment methods are very ill-equipped for a competence-based curriculum, schools, enterprises and institutional actors have to find new ways to develop appropriate assessment tools.

### *Changing teacher roles*

It can easily be overlooked how much the role of teachers (and students!) changes, when CBE is implemented (Jellema, 2003). The teacher is supposed to switch from an expert role, transferring knowledge, towards a coaching role, guiding students' learning processes. Students are supposed to take self-responsibility for their learning, whereas the teacher used to be in charge. This requires a totally different attitude for both parties, perhaps even a paradigm shift. Achieving this challenge is all too easily forgotten by policy-makers, talking about implementing CBE.

### *Competence-based management*

Developing BCE, it is inevitable to give structural attention to competence development of teachers and school managers. "Practice what you preach" should be the leading principle. According to Mulder (2000), competence-based management implies an open culture and co-operation. If these conditions are not met, competence based management will be a failure. Management itself has to "walk the talk", otherwise people at lower level inside the schools will perceive it as an ordinary management tool, instead of appreciating it as a supporting strategy to develop both the school organisation as the individual.

### **Concluding remarks**

The recent development of CBE in Dutch VET has raised an innovative challenge for both teachers and policy-makers at all levels in the system. However, it should be recognised that the concept of competence and CBE is already used for 150 years in education and human performance technology. CBE is seen as an alternative for working with qualifications and qualification structures, as introduced in Dutch VET during the last 20-25 years. In fact, both approaches are based on the same assumptions: qualifications and competencies are both derived by job analysis and forecasting techniques and are both used as input for curriculum development and for assessment of learning outputs. So the innovative flavour of CBE can easily be turned into "old wine in new barrels".

However, introducing CBE in Dutch VET has raised substantially attention and support for the innovation of teaching-learning arrangements in the direction of flexible pathways and self-directive learning, according to the principles of socio-constructivist learning theories. The introduction of CBE should stimulate and facilitate the development of customised pathways, in which students, teachers and masters on the shop floor can build learning communities.

Most of the pitfalls and dilemmas described are dealing with the balancing of local flexibility with national standardisation. To guarantee the exchange value of qualifications, and to regulate (financial) duties and rights, national arrangements are needed. But often, national regulations hinder local flexibility and professionalism. The discussions around CBE in Dutch VET, can be understood from this system dilemma.

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