Teaching and Teacher Education 27 (2011) 694–702

Contents lists available at ScienceDirect

Teaching and Teacher Education

journal homepage: www.elsevier.com/locate/tate

Authentic and self-directed learning in vocational education: Challenges to vocational educators

Elly de Bruijn [a,*], Yvonne Leeman [b]

[a] Utrecht University, The Netherlands
[b] University for Humanistics, The Netherlands

ARTICLE INFO

Article history:
Received 30 November 2009
Received in revised form
24 November 2010
Accepted 26 November 2010

Keywords:
Learning activities
Teacher roles
Vocational education
Competence-based education
Authentic learning
Self-directed learning

ABSTRACT

This article analyses the dilemmas and practical tensions in implementing competence-based vocational education. Eleven case studies were conducted, including observation of lessons and interviews with teachers and students. The results show that schools meet various fundamental issues in realising this approach. A crucial question is how to stimulate the acquisition and use of a way of knowing and thinking that is based on vocational theory. Reflection, authenticity and coaching are relevant characteristics that are hardly put into practice yet. To understand these results the article reflects on factors that account for the distance between promising concepts and actual teaching practice.

1. Introduction

Over the last twenty years competence-based education has become a dominant trend in vocational and professional education in Europe and Australia (de Bruijn, 2004; Brockmann, Clarke, Méhaut, & Winch, 2008; Clarke & Winch, 2007; Weigel, Mulder, & Collins, 2007). Pressure behind it has been the supposed lack of relevance of vocational education. The shared problem is the novice who knows a lot but is not yet able to utilize this knowledge fully in the workplace. The term covers various conceptual ideas and practices ranging from technical and managerial thinking in which education is narrowed down to training competency, to emphasizing the development of full vocational competence in which autonomous identity development is crucial.

We, situating ourselves in the line of international research based on the latter, consider that effective competence-based vocational education promotes self-directed and authentic learning both within and beyond the workplace. As Billett (2001a) explained: curricula in vocational education could best be designed in terms of pathways of participation in social practice. According to him knowing in practice (i.e., vocational expertise) can only be developed if there is ample opportunity to access and participate in that practice (cf., Aarkrog, 2005; Tynjälä, 2008). There is some consensus that engaging in practice and relating acting and thinking also motivate and facilitate continuous learning (Rosendahl & Straka, 2007; Sembill, 2003; Smith, Clegg, Lawrence, & Todd, 2007). Curricula in which enacting in social practice is central make students aware of their own role in learning and of the need to direct one's own development to become a professional right from the start (Cohen-Scali, 2003; Meijers, 2002).

This new orientation of vocational education has led to fundamental changes in the work of vocational educators (i.e., teachers and trainers). These changes include the scope of courses offered, the content, goals, forms of instruction, coaching roles, methods and daily routines at work (de Bruijn, 2004; Biemans et al., 2009; Billett, 2001b).

In this article we analyse the dilemmas and practical tensions in implementing competence-based education in vocational courses, in a context in which conditions are not ideal and the concept is diffuse and still being designed. The courses included in our study were in the technical domain at the highest qualification level in senior secondary vocational education (level 4/5 of the European Qualification Framework, European Commission, 2008) for youngsters aged 16 or older who have completed the first compulsory cycle of secondary education. In the Netherlands these courses are part of the formal education system. Students obtain their qualification by learning in school and in the workplace. The courses are four-year,

* Corresponding author. Schuine Hondsbosschelaan 25, 1851HN Heiloo, The Netherlands. Tel.: +31 6 10859349; fax: +31 30 2532352.
E-mail address: e.debruijn@uu.nl (E. de Bruijn).

0742-051X/$ – see front matter © 2010 Elsevier Ltd. All rights reserved.
doi:10.1016/j.tate.2010.11.007

full-time programmes comprising at least 20% learning in the workplace. Graduates of these programmes are allowed to enter the bachelor programmes in higher professional education.

2. Powerful vocational learning environments

We used the *model of powerful learning environments* to delineate a concept of competence-based education which pays attention to both authentic and self-directed learning. The model is grounded in the idea of cognitive apprenticeship (Collins, Brown, & Newman, 1989), that is acquiring complex knowledge and skills within a social and functional context. This idea of cognitive apprenticeships stresses both learning to perform in practice and going beyond these specific situations thus acquiring understanding, metacognitive skills and flexibility. The aim of the model, inspired by sociocultural theory (e.g., Billett, 2001a; Collins et al., 1989; Raizen, 1994), is the development of vocational identity. Important elements are reflective, authentic and constructive learning from a situative perspective on cognition (e.g., Lave & Wenger, 1991; Putnam & Borko, 2000).

This model was the result of previous research on competence-based vocational courses in various domains such as business administration, health care and technology (De Bruijn & Moerkamp, 2000; de Bruijn et al., 2005). Theoretical principles were validated by practice in terms of enrichment, adjustments and specification. The result of this previous research project was a *model of powerful learning environments* for vocational education. This model comprises a mix of traditional features, such as instruction, with new features, like active and reflective learning:

Programme characteristics

1. Formation of vocational identity as the starting point for learning
2. Authenticity
3. Reconciliation of thematic and subject-oriented contents

Learning activities of students

4. Construction
5. Reflection

Guiding activities of teachers

6. Adaptive instruction and modelling
7. Coaching
8. Supporting self-regulation skills

Evaluation

9. Instrumental testing of partial knowledge, insight and skills
10. Assessment of competencies

This article portrays the educational practice of the vocational courses included in the study in terms of these characteristics of *powerful learning environments* and aims to investigate the dilemmas and practical tensions that arise when implementing them.

3. Methodology

3.1. Participants

Intensive case studies were necessary to understand the teaching and learning processes in educational practice. This method limited the number of courses that could be studied. As teaching approaches differ from vocation to vocation, depending on the standards, culture and habits relating to vocational domains (Billett, 2001b), it was decided to select all courses from the same vocational sector and to limit the number of vocations the courses train students for. In this way the variation in educational approaches that we wanted to take into account, was less likely to be caused by vocation.

The cases were selected in two phases. Firstly, the domain was chosen by consulting key persons in vocational education. We wanted to know a) which vocational sector was most active in implementing competence-based education; b) which courses within this sector demonstrate most variations of teaching approaches between schools. When the cases were selected (2001–2002), many practices in vocational education in the technical domain appeared to be changing, partly because of shortages of skilled workers, fewer youngsters taking these courses and complaints by industry that the course contents and equipment were obsolete. This first phase resulted in the choice of three courses in the technical domain: middle manager Process Engineering (PE) (4 schools), manager/entrepreneur Automobile Engineering (AE) (22 schools) and middle manager Soil, Water and Road-building (SWR) (23 schools). In addition, one course in the trade sector was selected, branch manager/shopkeeper (20 schools). In total there were 69 school departments offering these four courses.

Secondly, as we only could study a limited number of cases, the coordinators of these 69 cases were sent a questionnaire on the programme and teachings methods so that we could select the courses that varied most. The questionnaire asked about the ideal situation and the actual practice regarding each of the ten characteristics of the *model of powerful learning environments*. Fifty-three of the coordinators returned the questionnaire and 11 courses in different parts of the country were selected for inclusion in the research. On the basis of this self-assessment and an additional interview with the coordinator, five of these courses could be considered to be relatively powerful and six to be less powerful. The 11 courses were on PE (2), AE (4) and SWR (5) comprising about 30% practical training on the job and 70% learning in the school setting. The powerful and less powerful courses were distributed proportionately over the three vocations. In total 200 students between 16 and 22 (mean age 18) of which 97% males, and 11 teams of four to seven teachers were participating in the study. According to the coordinators all these courses were in the process of implementing competence-based curricula and teaching practices.

3.2. Data collection

Data collection was concentrated in two periods, in the first and second semesters of the second year of the courses. Instruments were developed for lesson observations, analyses of curricula and teaching materials, and interviews with teachers and students. The ten characteristics of the *model of powerful learning environments* served as a common framework for defining the research instruments.[1] Each characteristic was specified in two descriptions or vignettes, one indicating the 'powerful' practice and the other indicating the non-powerful practice. Both vignettes were formulated in positive terms, that is instead of formulating which characteristics were *not* present, formulating which (opposite) characteristics *were* present. Except for the observation schemes, all instruments used descriptions that were based on these vignettes. The observation schemes used detailed, visible activities referring to the vignettes and data needed to be interpreted afterwards by the researchers using a format in which the vignettes were applied again.

Six researchers were engaged in data collection with two researchers working on each course. During the observations one

[1] The instruments are available from the first author.