TILBURG ◆ UNIVERSITY

Tilburg University

Continuing teacher development for competence-based teaching

Janssen, A.

Publication date:
2009

Link to publication in Tilburg University Research Portal

Citation for published version (APA):
Janssen, A. (2009). *Continuing teacher development for competence-based teaching: The role of teachers in Competence-Based prevocational Secondary Education*. Ridderprint.

Continuing Teacher Development for Competence-Based Teaching

The Role of Teachers in

Competence-Based Prevocational Secondary Education

Audrey Seezink

Title: Continuing Teacher Development for Competence-Based Teaching: The Role of Teachers in Competence-Based Prevocational Secondary Education

Titel: Professionalisering van docenten voor competentiegericht onderwijs: De rol van docenten in competentiegericht vmbo

Continuing Teacher Development for Competence-Based Teaching

The Role of Teachers in

Competence-Based Prevocational Secondary Education

Proefschrift ter verkrijging van de graad van doctor aan de Universiteit van Tilburg, op gezag van Rector Magnificus, prof.dr. Ph. Eijlander, in het openbaar te verdedigen ten overstaan van een door het college voor promoties aangewezen commissie in de aula van de Universiteit op woensdag 18 november 2009 om 14.15 uur door

Audrey Seezink

geboren op 31 maart 1981 te Spaubeek.

"He who dares to teach must never cease to learn"

- Richard Henry Dana (1815 – 1882) -

Table of Contents

Chapter 1

General Introduction

This introductory chapter presents the context of prevocational secondary education (PVSE) in which the study was conducted and the main theoretical perspectives underlying the research questions. Subsequently, an outline is provided of the four empirical studies presented in chapters 2 through 5. Chapter 6 will contain a critical reflection on the empirical studies that have been conducted; their limitations will be discussed and suggestions will be provided for further research.

The main purpose of this dissertation is to make a scientific contribution to the body of knowledge about the roles of the teacher within competence-based vocational education. Schools involved in such innovations are engaged in radical educational reforms which have substantial implications both for the school as a labor organization and for teachers. Teachers currently employed within PVSE have not been educated to fulfill these new roles associated with competence-based vocational education; nor did they experience it themselves. Hence, they will need to undertake continuing professional development activities. Gaining insight in the foundations underlying the instructional measures taken by teachers, as well as in their continuing professional development efforts is critical to evaluate the new role of teachers in competence-based vocational education. Research that is strongly embedded in ongoing innovations within (pre)vocational education can play a significant role in enlarging the knowledge base regarding the implementation of competence-based (pre)vocational education.

The practical purpose of this dissertation is to produce knowledge that can support management boards of secondary schools and other educational institutes (such as teacher training institutes), (1) in recognizing the need for continuing

professional development, (2) in gaining awareness of teachers' personal values in implementing competence-based education, (3) in acquiring insight in processes associated with undertaking continuing professional development activities and in their potential learning outcomes, and, (4) in providing directions to support educational innovations.

Context of the Study

The Dutch educational system is based on eight years of general primary education, starting from approximately age of 4 until the age of 12 years old. After completing primary school pupils can continue their educational careers in three ways: through a) a four-year prevocational secondary education program (in Dutch: VMBO), b) a five-year senior general secondary education program (in Dutch: HAVO) and c) a six-year pre-university education program (in Dutch: VWO). This dissertation focuses on prevocational secondary education. Approximately, 60 per cent of Dutch school-going youth attend prevocational secondary education. After completing their prevocational secondary education however, they do not yet receive a vocational qualification. In order to obtain their vocational certification they need to enter and complete a three- or four-year senior secondary vocational education program.

Economic, political and societal developments require major changes within Dutch vocational education programs (De Bruijn, 2004; Wesselink, Biemans, Mulder, & Van den Elsen, 2007). The past decade has witnessed increasing interest in the concept of competence-based vocational education (Biemans, Nieuwenhuis, Poell, Mulder, & Wesselink, 2004; Foot & Megginson, 1996). European governments have been trying to find ways for improving quality of vocational education by introducing competence-based education (Foot & Megginson, 1996; Weigel, Mulder, & Collins, 2007). Defining competence-based education has proved to be a difficult job (Mulder, Weigel, & Collins, 2007; Van Merriënboer, Van der Klink, & Hendriks,

2002). Many different definitions are used and there is no agreed-upon consensus about the concept. In general however, rather than focussing on knowledge transmission, competence-based vocational education endeavors to support learners in acquiring and integrating the knowledge, skills, and attitudes (i.e., competences), needed for their chosen vocation.

Since teachers are recognized as a crucial aspect of the learning environment within schools, facilitating their professional development is increasingly gaining attention at the level of both national government and school policy makers. Many schools in secondary vocational education are participating in various innovative initiatives to implement competence-based vocational education (Biemans et al., 2004; De Bruijn, 2004; Van der Sanden, Kok, & Van Os, 2003). One current initiative in schools is the creation of knowledge communities, in an attempt to involve teachers in the conceptualization and design of competence-based vocational education (Van der Linden, Teurlings, & Zuylen, 2007; Van der Sanden, Seezink, & Taconis, 2005). These communities aim to integrate school development and competence development of teaching staff, which provide an excellent opportunity for studying professional development of teaching staff from a school improvement perspective.

Theoretical Background

The quality of education depends to a large extent on the quality of teaching staff. The quality of teaching staff depends on their participation in continuing professional development. Managing and maintaining teacher quality, however, is a shared responsibility of the individual and the organization. There are at least two reasons why continuing professional development needs to be fostered: first, initial teacher education cannot provide the extensive semantic and procedural knowledge obtained just by working in practice, and second, like all professionals, with the

present-day demands of society teachers are expected to undertake life-long learning trajectories (Knight, 2002). Continuing professional development can be fostered in the context of school development, as is the case in innovative knowledge communities. In some cases both efforts can even be integrated, as will be illustrated below.

Individual Teacher Learning

In the past few decades, the field of teacher learning has developed an increased interest in implicit and experience-based knowledge (e.g., Hoekstra, 2007; John, 2002; Loughran, 2007; Van Tartwijk, Den Brok, Veldman, & Wubbels, 2009; Zanting, Verloop, & Vermunt, 2001). This dissertation takes a perspective based on social constructivism, which views learning as giving meaning to activities of knowledge creation within an individuals' personal and unique framework (Van der Sanden, 2004). Individual learning is defined as "an ongoing work-related process of undertaking activities that leads to change in cognition or behavior, or both" (Meirink, 2007, p. 19). Becoming aware of one's own implicit views and beliefs forms also an essential component of this (Berings, 2006).

Teachers nowadays are expected to support their pupils by helping them integrate knowledge, skills, and attitudes into personal competences (Onstenk, 1997, 2001). As noted earlier, teachers currently employed in prevocational secondary education have not been educated to fulfill these new roles; nor did they experience competence-based education themselves. This requires from teachers the acquisition of new competences that will enable them to better provide competence-based vocational education. In developing these new competences, it is important not only to concentrate on the behavioral aspect of teaching, but also to establish a long-term change in teachers' belief systems, values, intentions, and individual action theories underlying their teaching practice (Beijaard, Verloop, Wubbels, & Feiman-Nemser, 2000; Bolhuis, 2000; Van der Sanden, 2004; Van Eekelen, 2005; Van Velzen, 2002). This dissertation focuses on the ways in wich teachers give meaning to their new

roles, on the challenges they experience, and on the learning processes involved in developing competence-based vocational education programs. Powerful starting points can be found within the framework of the cognitive apprenticeship model (Collins, Brown, & Newman, 1989), for designing and implementing competence-based learning environments in vocational education (De Bruijn et al., 2005; Van der Sanden, Spit, & Schouten, 1999). The cognitive apprenticeship model can be used for to guiding learners in their gradual development from novices to masters in a certain complex domain (Collins et al., 1989). The cognitive apprenticeship model specifies four dimensions: *content*, *teaching methods*, *sequence*, and *sociology*. The dimension of *content* refers to the importance of differentiating among different types of knowledge for becoming an expert within a certain domain. The dimension of *teaching methods* refers to guidelines for teachers to help learners integrate cognitive and meta-cognitive strategies for constructing, using, and managing knowledge. The third dimension of *sequence* refers to how teachers can identify changing learning needs of learners and adjust sequences and structures of learning materials accordingly. The last dimension of *sociology* refers to the powerful aspect of embedding learning within an authentic and social context.

At first sight, the concepts used in the cognitive apprenticeship model evoke associations with what Sfard (1998) identified as the participation metaphor, where learning is viewed as a gradual process in becoming part of a professional community. Other parts of the model however, espouse distinctive relations with what Sfard called the acquisition metaphor, which refers to building or accumulating declarative knowledge. Sfard further suggested that teacher learning is often caught in a tension between these two metaphors; therefore, she emphasized the need to employ an integrated approach that would diminish the drawbacks of each metaphor. Especially within competence-based vocational education this integrated approach seems valuable, since the curricula of secondary schools are now being reformed and redesigned in alignment with the professional communities.

Organizational Learning in Schools

Individual learning is widely valued for its significance to organizational learning (e.g., Casey, 2005; Crossan, Lane, & White, 1999; Forman, 2004), although organizational learning entails more than the sum of individual learning experiences (Casey, 2005). Organizational learning is said to occur if an outcome (i.e., a product or process) of a collective activity has been integrated and has become part of the organization (Argyris & Schön, 1996).

Within the Dutch educational system, school management and teaching practice used to be clearly separated and personnel management was an underdeveloped area (Van Driel, 2006). In 2005 however, the Dutch minister of Education, Culture, and Science decided that every secondary school needed to introduce a system of integral personnel management (or IPM) (Kervezee, 2006). Although the attention paid to introducing an integrated human resource (HR) policy in schools has grown over the past few years, little is known from conceptual and empirical research about the implementation processes associated with IPM.

Another change is that with the arrival of competence-based vocational education, the attention paid to competence development of teaching staff has increased, as discussed above. Since teachers are considered an integral aspect of the learning environment, they form a critical link in implementing an educational reform (Knapp, 1997). As noted before however, managing and maintaining teacher quality is a shared responsibility of the individual and the organization. Often continuing professional development is undertaken through formal education activities and, although these might contribute to individual teacher learning, the transfer to teaching practice often remains difficult (Knight, 2002). In addition, involving teachers in formal training activities (such as courses) often entails releasing teachers of their teaching duties. This creates other challenges for the schools (e.g., reaching their yearly hourly teaching quota) as well as the teachers (e.g., having enough time to prepare pupils for their exams). Since teachers and

educational institutes have little time available for formal education activities, teachers are expected to obtain these new required competences within their workplace environments (Poell, Chivers, Van der Krogt, & Wildemeersch, 2000). Besides this, IPM requires (amongst other things) that the competence development of teaching staff is related to the schools' organizational needs (SBO IPB, 2005).

Integrating Individual Learning and Organizational Learning in Schools

In an attempt to promote organizational learning, a number of Dutch schools have been experimenting with giving current and already qualified teachers the responsibility for restructuring educational programs into new competence-based vocational curricula. Van der Sanden (2004) emphasized the importance of creating strong regional knowledge communities to link individual learning with organizational learning in schools. Van der Sanden proposed a framework that attempts to align the four practices of initial **S**chooling of teachers, **O**rganizational development of (secondary) schools, **A**ction- and development-oriented research, and continuing **P**rofessional development of teachers (a framework also known as SOAP). The creation of knowledge communities inspired by the SOAP approach is aimed at integrating these four practices. Establishing better exchanges among employees of educational institutes (e.g., student teachers, educational researchers, teachers, and teacher educators) brings new opportunities for linking individual learning with organizational learning in schools (Seezink & Van der Sanden, 2005). The two practices of schooling of teachers (initial teacher training) and professionalization of teachers (continuing professional development) are associated especially with individual teacher learning, whereas the two practices of organizational development and research are concerned primarily with organizational learning. The practice of research also has an individual learning component, as teaching staff involved in research can learn from their personal efforts as well. The SOAP approach, however, emphasizes collaborative action- and

development-oriented research, which aims to provide input for organizational development.

The central goal of knowledge communities based on the SOAP approach is creating and designing competence- and career-oriented learning environments for pupils, which foster active and self directed learning in vocational settings. Lambert (2003) suggested that student teachers can adopt a new role as change agents in between teacher education, vocational educational institutions, and other work organizations. As student teachers are not (yet) influenced by a school's internal culture, they are able to provide creative, outside-the-box ideas.

Acknowledging perceptions and ideas as valuable is critical within the cross-institutional nature of a knowledge community. Discussing and questioning them can lead to 'expansive learning' (Tuomi-Gröhn & Engeström, 2003). Expansive learning is triggered when communities involved in a collective aim or venture take the action of questioning existing practice, resulting in debate and collective analysis of contradictions, and eventually leading to new collective products, processes, or concepts. The multiple voices and contradictions within the organization guarantee the dynamic nature of collaborative concept formation (Engeström, Toiviainen, Pasanen, & Haavisto, 2004). The focus is on overcoming tensions, disturbances, and ambiguities within a cross-institutional knowledge community, aiming to initiate knowledge-creation processes and resulting in products at the individual and the organizational level. "Combining the perspectives of learning as social and workplace participation, and those of learning as personal construction is intellectually possible and points towards more effective ways of understanding and improving that learning" (Hodkinson & Hodkinson, 2005, p. 114). Becoming involved in school development by sharing and discussing emerging problems may, therefore, not only result in the creation of learning environments and learning processes, but also can foster the participants' beliefs that innovation is part of daily practice (Van der Sanden et al., 2005).

Two Main Research Questions

The general aim of the studies reported in this dissertation is to examine the role of teachers in conceptualizing and designing competence-based prevocational secondary education. In order to accomplish this aim, the following two research questions were formulated for the studies presented in this dissertation:

1. How do teachers in prevocational secondary education conceptualize and design competence-based education? (chapters 2 and 3)

2. How do teachers acquire, within the context of their schools' policies, the competences needed to help pupils become competent? (chapters 4 and 5)

Overview of the Dissertation

In this dissertation four studies are reported. The first research question is addressed in chapters 2 and 3. Chapters 4 and 5 discuss the second research question. As chapters 2 through 5 have been published (or submitted for publication) as journal articles and their contents in unchanged form have been used for this dissertation, some overlap and repetition among the chapters are inevitable. The sixth chapter summarizes and discusses the four studies and provides the limitations and implications for further research. Below are short descriptions of each chapter:

Chapter 2 explores the individual action theories of PVSE teachers, which provide the foundation for their actions in work situations. The study described in chapter 2 integrates the cognitive apprenticeship model with the acquisition and participation metaphors in studying the individual action theories of teachers involved in the conceptualization and design of competence-based prevocational

secondary education. Various qualitative research methods are used, including concept maps, cued recall, semi-structured interviews and a feedback session.

Chapter 3 describes a larger-scale study that explores the individual action theories of prevocational secondary teachers regarding the value of the cognitive apprenticeship model in designing competence-based prevocational secondary education. The study described in chapter 3 aims to validate the outcomes of the qualitative study in a quantitative study.

Chapter 4 reports on a study that investigates which professional development activities related to the implementation of competence-based vocational education teachers undertake, in the context of their schools' human resource (HR) policies. Two HR policies of secondary schools are examined: the compulsory implementation of integral personnel management (IPM) and the voluntary implementation of an integrated SOAP approach. A comparison is made between SOAP and non-SOAP schools in terms of undertaken professional development activities. Semi-structured interviews are analyzed both qualitatively and quantitatively.

Chapter 5 reports on a case study of the implementation of the SOAP approach. Different educational institutions (several PVSE schools, an SSVE school, and a teacher training institute) and different participants (PVSE teachers, SSVE teachers, student teachers and teacher educators) collaborated in knowledge communities within an innovation project aimed at designing a competence-based prevocational curriculum. Semi-structured interviews were held with 37 participants in the innovation project, in order to investigate its individual and organizational learning outcomes.

The *sixth and final chapter* of this dissertation summarizes the main findings and conclusions from the four empirical studies. It reflects on conceptual, methodological, and empirical aspects of the research. It concludes with a discussion of its implications and suggestions for further research.

Chapter 2

Integrating Acquisition and Participation:

An Exploration of Teachers' Individual Action Theories[1]

Purpose The purpose of this study is to explore individual action theories of teachers who participate in initiatives for developing competence-based prevocational secondary education.

Design/methodology/approach Various qualitative research techniques were used, including concept maps, cued interviews, semi-structured interviews and a feedback session. Inductive qualitative data analyses were performed in an attempt to explore the cognitive apprenticeship model and the acquisition and participation metaphors. By data triangulation we tried to avoid the pitfalls associated with each methodology.

Findings Results show that 'teaching methods' and 'sociology' aspects were more prominent in teachers' action theories than 'content' and 'sequencing' aspects. Although teachers valued participation by pupils in a professional community, they feared that knowledge acquisition would become undervalued.

Research Limitations This study was limited to twelve teachers involved in a collaborative development project. Due to practical reasons not all subjects were able to participate in all four data sources.

Originality/value Research with strong connections to ongoing innovations within vocational education can play a significant role in enlarging the knowledge base regarding competence-based education. This study also offers examples and a practical use of the various dimensions of the cognitive apprenticeship model that can be used in constructing and evaluating learning environments. In addition this study can help schools and knowledge communities of teachers make sense of the ways in which acquisition and participation are related in their own school practice.

---

[1] This chapter is an elaborated version of an earlier published article in Dutch, which appeared as Seezink A., & Van der Sanden, J. M. M. (2005). Lerend werken in de docentenwerkplaats: Praktijktheorieën van docenten over competentiegericht voorbereidend middelbaar beroepsonderwijs. *Pedagogische Studiën, 82*(4), 275-292.

Dutch prevocational secondary education (PVSE) and senior secondary vocational education (SSVE) have been experimenting with new teaching and instructional strategies for a number of years (e.g., De Bruijn, 2004; Van der Sanden et al., 2003). Traditionally, the tendency of educational reforms in the Netherlands has been to focus on large structural changes; however, nowadays the focus lies on innovating primary processes. Currently, a new competence-based qualification system is being introduced within Dutch SSVE. Competence-based education originates from a social-constructivist perspective. Knowledge development and learning are viewed as personal development processes heavily influenced by contextual factors and social interaction. Meaningful learning requires the application of knowledge and skills in functional professional or social settings (e.g., Collins et al., 1989; Dall'alba & Sandberg, 1996). As prevocational secondary education prepares learners for careers in vocational contexts, teachers should take responsibility for the development of their own competences and find new ways to customize educational arrangements to pupils' occupational careers. The question arises how to design and implement competence-based vocational education in the Dutch system (Ritzen, 2004), highlighting competence development and its significance for performance in social and professional settings (Biemans et al., 2004). Schools have been granted autonomy by the Dutch central government to reform their curriculum and teaching methods in the first stages of secondary education. This autonomy has been provided partly to decrease dropout rates and to facilitate the efforts that meets the qualification demands that are set by the European Union benchmarks (Ministerie van Onderwijs, Cultuur & Wetenschap, 2005, p. 33). The percentage of dropouts within PVSE increased from 7.7 in 1993 to 10.9 in 1999 (Interdepartementair Beleids Onderzoek VMBO, 2005, p. 44). Furthermore, approximately 30 per cent of PVSE pupils do not proceed into SSVE (Interdepartementair Beleids Onderzoek VMBO, 2005, p. 8). This creates a societal dilemma, as PVSE is intended for vocational preparation only and pupils who finish it do not receive a vocational qualification. They need to finish SSVE, therefore, in order to receive their vocational qualification.

The implementation of competence-based prevocational secondary education has serious implications for the tasks, roles, and competences of teachers. Teachers, who were used to follow teaching programs and materials produced by educational publishers, are now expected to develop new educational programs together with their colleagues. Existing teaching methods may not provide enough support; therefore, teachers from different disciplines need to cooperate and design new educational programs that integrate different curriculum parts, for example, combining general subjects with vocational subjects. Many schools in PVSE are participating in new initiatives to elaborate upon such innovations (Biemans et al., 2004; De Bruijn et al., 2005; Van der Linden, Seezink, & Vermeulen, 2006).

Van der Sanden (2004) stressed the importance of knowledge communities of researchers, teachers, student teachers, teacher educators, and employees of other work organizations for initiating and organizing learning. The focus is on establishing better relationships among activities in the fields of **S**chooling of teachers, **O**rganizational development of schools, **A**ction- and development-oriented research, and **P**rofessional development of teachers. Establishing stronger relationships among the "SOAP" associates results in opportunities to embed individual learning processes within collective learning processes. An important part of the SOAP principle is that school organizations and networks of teachers organize knowledge communities to pursue a certain degree of 'collaborative concept formation' at work (Engeström et al., 2004). Collaborative concept formation concerns not solely the acquisition of knowledge that others may already possess, but relies also on the concept of 'expansive learning' (Tuomi-Gröhn & Engeström, 2003). Expansive learning occurs when a group of individuals involved in a collective activity question existing practice. Thus initiating a process of debate and analysis of contradictions, it focuses on the collaborative development of new complex communal concepts and ideas (Tuomi-Gröhn & Engeström, 2003). According to Engeström et al. (2004), concept development is not a vertical 'top-down' process where concepts are uniformly transferred from one individual to another. They stress

that concepts are unique, personal, and dynamic in nature; whenever individuals collaborate, some sort of collaborative concept formation occurs (Engeström et al., 2004).

Research on the professional development of teachers reveals an increased interest in implicit and experience-based practical knowledge that forms the foundation of instructional actions of teachers in vocational education (e.g., Barnett & Hodson, 2001; Henze, Van Driel, & Verloop, 2007a; Loughran, 2007). To take an integrated perspective on working and learning, it is key to look at teachers' learning theories and integrate them with their theories of action (Argyris & Schön, 1978), because they provide the foundation for their actions in work situations. Van der Sanden (2004) posited that the development of adequate personal learning and action theories is crucial within the process of competence development. He referred to a personal learning and action theory as a: *"... personal framework, with which learning- and work-related situations can be interpreted and on which decisions about behavior are founded"* (Van der Sanden, 2004, pp. 13-14). The aim of this study is to explore the individual action theories of teachers who participate in initiatives for developing competence-based education.

Theoretical Background and Research Questions

The cognitive apprenticeship model (Collins et al., 1989) provides a framework for designing and implementing competence-based learning environments in vocational education (De Bruijn et al., 2005; Van der Sanden, 2004). It is based on constructivist learning principles and focuses on actively involving pupils in learning processes within a powerful and competence-based environment. The cognitive apprenticeship model specifies four dimensions that should be considered in designing powerful environments: content, method, sequence, and sociology.

The first dimension, 'content', holds that it is important to differentiate between different types of knowledge such as domain-specific and heuristic knowledge, control strategies and learning strategies. To become a master within a certain domain it is important to pay attention to problem-solving strategies and heuristics, especially regarding how to acquire these types of knowledge.

The second dimension, 'method', provides six guidelines for teaching methods to help learners integrate cognitive and meta-cognitive strategies for constructing, using, and managing knowledge. These six teaching methods are designed to provide learners with the opportunity to observe, engage, and discover expert strategies in their context. This will enable learners to see how these strategies fit together with their factual and conceptual knowledge and how to make use of the variety of resources in social and physical contexts. These teaching methods are 1) modeling; for vocational education this entails the procedures and results of competence-development activities, the associated problems, and possible solutions, 2) coaching; measures that teachers can take by providing guided tasks and process-oriented feedback, 3) scaffolding and fading; the gradual transfer of responsibility for carrying out learning activities from teacher to pupil, 4) articulation; explication of mental activities, which are often not accessible to classmates or teachers and are often still abstract even to the pupils themselves, 5) reflection; looking back on, analyzing, and evaluating learning activities, and 6) exploration; carrying out learning activities in a wide range of contexts and settings, so that pupils experience different tasks and problems with a view to their competence development and professional identity.

'Sequencing', the third dimension, prescribes how to identify changing learning needs and adjust the sequence and structure of learning materials accordingly. There are three central principles: increasing complexity, increasing diversity, and global before local skills. Curricula designed according to the elaboration theory of Reigeluth (1999) are consistent with these principles. Characteristic of this theory is that the first lesson epitomizes (rather than

summarizes or recapitulates) the ideas, skills, essential concepts, and principles that form the core of the curriculum, in a concrete and meaningful environment. Gradually the complexity increases, situations start to diverge, and the links with the first lesson get emphasized.

The final dimension, 'sociology', refers to the sociology of the learning environment; a critical dimension, which has received increasing attention. Important principles associated with this dimension are situated learning, a culture of expert practice, promoting intrinsic motivation, exploiting cooperation, and exploiting competition. To promote learners' intrinsic motivation (Montague & Knirk, 1993) they need to encounter different levels of expertise in an authentic environment. In vocational education, therefore, learners need to engage immediately in the authentic context and become part of the community of practice to learn the values, habits, and practices associated with their particular line of work.

Nieuwenhuis (1991) and Fürstenau (2003) adjusted the cognitive apprenticeship model for vocational education. Nieuwenhuis (1991) concentrated on 'increasing the complexity of vocational settings' within the sequencing principle and the roles that experts can play as coaches or role models in guiding learning processes. Fürstenau (2003) focused on how pupils construct meaningful knowledge of complex production processes through exploration. Van der Sanden, Spit, and Schouten (1999) pointed out the potential value of the cognitive apprenticeship model for making more powerful and more vocationally oriented learning environments in PVSE. Hence, the first research question is: Which concepts and principles from the cognitive apprenticeship model can be identified in the individual action theories of teachers who participate in initiatives for developing competence-based education?

Certain parallels can be drawn between elements of the cognitive apprenticeship model and the participation metaphor described by Sfard (1998). Learning can be viewed as an enculturation in the practices of a certain community through participation in that community. Lave and Wenger (1991) defined this

enculturation process as the mastery of specific knowledge and skills by newcomers in order to participate fully in the socio-cultural practices of a community. This can be related to principles within the 'sociology' component of the cognitive apprenticeship model (e.g., situated learning; culture of expert practice). Similarly, principles within the 'content' dimension (e.g., domain knowledge; learning strategies) of the model can be related to what Sfard (1998) called the acquisition metaphor, which refers to learning or 'acquiring' certain knowledge. It is essential to acquire certain 'pieces' of knowledge, which are gradually refined and combined into an increasingly stronger cognitive framework.

Although there is a potential tension between both metaphors, Sfard (1998) argued for an integrated approach. She highlighted the dangers of emphasizing one metaphor above the other. In vocational education there is often a major discrepancy between the general subjects, with their emphasis on the acquisition of knowledge and principles in a theoretical context, and the more vocationally oriented subjects, with their emphasis on practical settings and application contexts (see also Van der Sanden, Streumer, Doornekamp, & Teurlings, 2001). Before the introduction of competence-based education, knowledge, skills, and attitudes were no longer directly related to relevant practical settings as learning processes were all institutionalized in school settings. Competence-based education aims to reconnect these competences with practical settings. The danger is, however, that schools go from one extreme to the other, that is, from a one-sided focus on acquisition to an equally limited emphasis on participation. In an integrated approach the best elements of both metaphors are blended (Sfard, 1998). Hence, the second research question is: Is there evidence of a tension between the acquisition and participation metaphors in the individual action theories of teachers who participate in initiatives for developing competence-based education?

Methods

Context of the Study

The present research was initiated by one PVSE school within the Netherlands, and led to collaboration among a teacher-training institute at the university level, a teacher-training institute at the higher professional education level, and a centre for vocational education. The PVSE school itself initiated the development project because the teachers felt the need to provide pupils with a vocational alternative to the theoretical program. Normally within a PVSE school, a vocational pathway exists separate from a theoretical pathway. This school had taken the initiative to develop a new teaching program that combined both pathways. Through a new teaching program, with the help of new pedagogical and didactical approaches, the school aimed to support pupils in their choice of a sector, in continuing their educational careers, and finally in landing a professional career.

Both goals made it necessary to develop a new competence-based teaching program with matching teaching methods. The school created a teachers' workplace to give teachers from different disciplines, student teachers, and teacher educators the opportunity to collaborate together to design new competence-based educational arrangements. Teachers needed to apply and go through a selection procedure in order to be assigned to the teachers' workplace. Their task was to create and implement a more vocationally oriented teaching program by integrating vocationally oriented subjects with the general subjects. The teachers' workplace team gathered to organize meetings, to develop educational materials, and to educate/professionalize themselves in new areas. The team consisted of twelve teachers; three women and nine men with a mean age of 44.15 years ($\underline{SD}$ = 11.06). On average they had 16.08 years of teaching experience ($\underline{SD}$ = 11.78). Teachers responsible for education in general subjects (e.g., mathematics, physics, chemistry,

biology, information technology, Dutch, English, French, economics and business, history, and geography) collaborated with teachers of the newly introduced vocational subject (Technology) and a teacher from an SSVE school.

Since this was a new initiative, teachers committed themselves to developing four project weeks for their pupils instead of re-designing the whole school year at once. In these project weeks teachers attempted to integrate general subjects with vocational subjects. In the first project week they concentrated on new teaching methods. Subsequently, each project week concentrated on one of three sectors that pupils needed to choose from at the end of the school year. The main goal was to inform pupils about the specific problems and themes associated with each of these sectors and thus provide them with a good orientation. Based on these orientations, at the end of the school year the pupils had to choose one sector for their specialization in the next school year. The first three project weeks took place within the Technology classroom. In contrast, the final project week was held at a vacation park to provide a realistic, authentic environment where pupils were treated as 'employees in training'. Pupils were given a single integrated task, which they worked on for three days.

Materials and Procedures

To gather information about the individual action theories of teachers, we used qualitative research techniques: concept mapping, cued interviews, semi-structured interviews, and a feedback session. The present study was undertaken at the end of the school year 2003/2004 (May-June 2004), so that the teachers had about nine months of experience in designing and implementing new educational arrangements in the teachers' workplace.

Concept Mapping. Concept mapping is a technique for deriving the meaning that a person attributes to several concepts from a graphical reproduction of the coherence between propositions within a certain domain, which is generated by that particular person (Novak, 2002). Just before the start of the final project week, nine

teachers generated a concept map regarding the teaching methods in the combined theoretical/vocational pathway. The instructions given to them were:

> *"Write down as many concepts as you can on the cards related to developing competence-based PVSE. If necessary, you may use small sentences. Please make sure it is clear what you mean. Place every new concept or small sentence on a different card. Arrange these cards on the large sheet of paper, so that they make sense to you. Cards that are related to each other should be placed closer to each other than cards that are not related. Draw lines between the cards that you think are related. You can draw as many lines as you want to. Write the relationships between these cards alongside each line. If possible, try to transform the lines into arrows so that the direction of the relation is apparent. If you come across new concepts that you think are important, please add them to the cards. Underline the most important concepts."*

Cued Interviews. Five out of twelve teachers who acted as coaches during the project week participated in cued interviews. Video recordings were made of group meetings with the pupils, paying special attention to the interaction between pupils and teacher. The duration of these recordings was approximately thirty minutes. The video recordings were used as a basis for a cued interview with each teacher. The following questions were asked: Why did you make this intervention? Why did you decide to intervene at this particular moment? Why did you intervene like this? What did you think of the reactions of the learners? And what did you think about your own reaction? The interviews were recorded on an audiocassette and later transcribed and analyzed.

Semi-Structured Interviews. Not all teachers were present at the location of the project week, so not all teachers could be included in the cued interviews. Since all teachers participated in preparing and designing tasks, the remaining seven (out of twelve) teachers participated in a semi-structured interview. This interview took place within the same week as the cued interviews. The interview questions were based on literature about practical theories of teachers (e.g., Henze, Van Driel, &

Verloop, 2005; Van de Sande, 2007) and adapted to the context of vocational education. The semi-structured interview contained the following questions: How do you see the role of the teachers within this innovation? How do you interpret your own role in this innovation? How do you support learners in their tasks? Which elements do you find important within the curriculum? What do you want to achieve during the project weeks? Which educational measures do you think are desirable? What do you expect from learners as they finish their education at this school? And what do you think learners have learned during the project weeks?

Feedback Session. At the end of the school year, a feedback session was organized between the teachers' workplace team and the other "SOAP" associates to discuss and interpret the results of the study. This resulted in a three-hour discussion, which was recorded on a digital voice recording device (mp3) and then transcribed and analyzed.

Data Analysis

We used exploratory approaches for the different techniques. A qualitative analysis was used that was conducted in three phases: first, the coding of raw data; second, a data reduction process; and, third, the interpretation of the data (Miles & Huberman, 1994). After transcription of the interviews and feedback session, we explored the resulting text files and concept maps in search of concepts and principles from the cognitive apprenticeship model (Collins et al., 1989) to answer the first research question. Furthermore, we looked for illustrative quotes of each category (presented in Table 2.1). Finally, the information gained from performing these procedures was summarized in a data matrix (presented here as Appendix A).

A similar analysis was conducted to answer the second research question. Table 2.2 was used as an interpretive framework for the acquisition and participation metaphors. Text files and concept maps were explored to search for instances of either metaphor and, where teachers referred to both metaphors at the same time, to determine whether there was juxtaposition or integration between the two. If a

teacher referred to both metaphors in separate quotes, this was also considered juxtaposition. The results of this analysis are presented in Table 2.3.

Results

To answer the first research question and gain insight into the individual action theories of teachers participating in initiatives for developing competence-based education, we explored the data for concepts and principles from the cognitive apprenticeship model. All dimensions of the cognitive apprenticeship model played a role in the individual action theories of the teachers in our sample. However, the 'teaching methods' and the 'sociology' of the learning environment were more prominent aspects than 'content' and 'sequencing' were. Table 2.1 presents illustrative quotes from teachers in each data collection method placed within each dimension of the cognitive apprenticeship model.

Regarding the 'content' dimension, teachers expressed the need for domain knowledge, heuristic knowledge, control strategies, and learning strategies. Teachers valued not only conceptual and factual knowledge of a teaching subject, but also generally effective techniques within the trait, the managerial skills for carrying out tasks, and strategies for learning this learning content. Two examples are:

"For example, I am doing a chapter of [subject], with consists of [subject], [subject] and [subject] and so on. If you let them figure it out by themselves, it will take up to two weeks. Well, in two lessons I have taught them and now they understand it."

(Semi-Structured Interview, Teacher nr 1, Content, Domain Knowledge).

"Well, I think that is a trick-of-the-trade. When one pupil has figured it out, how to tune up a moped, he teaches that trick."

(Feedback Session, Teacher nr 2, Content, Heuristic Knowledge)

Table 2.1

Illustrative Quotes from Teachers in the Different Data Sources

Category	Sub-category	Source	Quote
Content	Domain knowledge	**(C)I:**	You have to have a broad knowledge base, when you talk about Africa then at least you have to know where South-Africa is and where Morocco is.
		FS:	[...] but as for content knowledge, then I think no, that what the pupils showed us, content wise, was actually very bad.
	Heuristic Knowledge	**CM:**	competence development of learners, different role of learners
		(C)I:	All right, now we've got it, but how do you approach someone like that? You cannot just barge in without preparing; he's the manager of this place!
		FS:	We are dealing with pupils that have old expectancies, and if we introduce competence-based education aren't you crating an even bigger gap, making it [education] even less effective?
	Control strategies	**CM:**	step-by-step plan (plan of approach)
		(C)I:	He should make a schedule, so he will not end up in trouble later. If he is not stimulated now, he will end up in trouble. You can see that coming. But he is gradually grasping the fact that he is procrastinating.
		FS:	If you look at what they have learned as to competences, working professionally and everything belonging to that, they have learned much within a week.
	Learning strategies	**(C)I:**	I want them (i.e., the learners) to think about it and make connections. Just to think a little further than usual.
		FS:	I feel they [pupils] did not learn any new [content], but that she did learned: I can trust myself in this situation.
Method	Modeling	**(C)I:**	Learners, I think I will explain this somewhat more, otherwise you get too much behind schedule.
		FS:	If you talk about modeling and on the other side scaffolding and fading, I think that makes sense.[...] If you let pupils explore and set them free, than I can imagine you do not want to do modeling.
	Coaching	**CM:**	Teacher: support and guidance
		(C)I:	But they fail to report the things they agree upon. That's why I said: [name] write down what they are discussing.
	Scaffolding and fading	**CM:**	Own responsibility of learning: the utilization of [subject] through the PC to keep up tasks, to plan and to apply for tests and exams.
		(C)I:	The guidance should be fading.
		FS:	If you talk about modeling and on the other side scaffolding and fading, I think that makes sense. [...] If you let pupils explore and set them free, than I can imagine you do not want to do modeling.
	Articulation	**CM:**	To discuss it together
		(C)I:	And then I want to know: where did you base that on?
	Reflection	**CM:**	Learners learn tot think, reflecting
		(C)I:	Well, just.... hold on... what was it and than continue. Make sure that we all go in the same direction.
	Exploration	**CM:**	To stimulate learners to explore some things themselves!
		(C)I:	Try to let learners figure it out themselves and not to give the answers too quickly.

Note: CM = Concept Map, (C)I = (Cued) Interview, FS = Feedback Session. If one of the data sources is not mentioned, no references were made to that category in that data source.

Table 2.1 (continued)
Illustrative Quotes from Teachers in the Different Data Sources

Category	Sub-category	Source	Quote
Sequence	Increase Complexity	**FS:**	So, let's say that we are planning [subject] and [subject] totally different within two years time. That means that we are going from the whole and start with less complex things and work towards the complex matter at the end of the fourth year. That is not what we are doing now, because the method is telling us what to do. And we are doing it from A until Z.
	Increase diversity	**CM:**	To expand the 'interest area'
		(C)I:	Also the combination of subjects, for example: go see what Economics has to say about this subject, or shall we do this together? More as a domain, as I call it.
	Global before local skills	**FS:**	I think that in the projects, but I do not know if you share my opinion, still have some projects, that go from parts to a whole. Instead of going from the whole to the parts. [...] I did not think that was a whole project. In my opinion that were individual parts.
Sociology	Situated learning	**CM:**	Safe pedagogical climate / practice and business
		(C)I:	Moreover you are there in a practical situation, you can't simulate a situation like that within any school.
		FS:	But if you would put that in the setting of a real [context] or for example a [context], than I think that this material expresses more.
	Culture of expert practice	**CM:**	Working together with the senior secondary vocational education, continuous learning curves prevocational – senior secondary vocation – higher professional education. Professional career orientation.
		C)I:	For example: by organizing excursions or inviting guest speakers…that can also be a 'native speaker'
	Intrinsic motivation	**CM:**	Motivation indispensable for 'self learning'
		(C)I:	And that's what you can see with the learners, that they are more motivated to participate, and , therefore, do they learn tremendous amounts.
	Exploiting cooperation	**CM:**	Discuss it together
		(C)I:	Well, I loved hearing that the learners finally learned to discuss and have a meeting properly.
		FS:	Is it considered knowledge if they [pupils] pass it on to each other: you have to change this type of exhaust or you need to change this and this in the carburetor, or you should cut out 10 centimeters of the exhaust? Or something of that kind....
	Exploiting competition		

Note: CM = Concept Map, (C)I = (Cued) Interview, FS = Feedback Session. If one of the data sources is not mentioned, no references were made to that category in that data source.

Regarding the 'teaching methods' dimension, teachers stressed the importance of modeling, coaching, scaffolding and fading, articulation, reflection, and exploration. One example is:

> *"We [the teachers] focus on the pupils. Let them find their own solutions. What could you do about this? With this problem: what did you think of yourselves? When the pupils get stuck: what do you think you [the pupils] can do to solve this?"*
>
> (Semi-Structured Interview, Teacher nr 7, Teaching Methods, Coaching)

Within different data collection methods, different aspects became visible. In their concept maps, teachers emphasized 'methods' and 'sociology', while in the interviews and feedback session 'content' and 'sequence' were more prominent. Some sub-categories, however, were never mentioned, or only once, including 'increase complexity' (sequence), and, 'exploiting competition' (sociology).

To answer the second research question, the interviews and feedback session were explored for instances of the acquisition and participation metaphors. Table 2.2 presents the keywords that were used for this analysis. Some teachers expressed instances of both metaphors at the same time. Juxtaposition of both metaphors occurred when teachers expressed difficulty or frustration in trying to do justice to both acquisition and participation. For example, some teachers were aware of the fact that they needed to change their educational practices but at the same time they did not want to abandon their current values. Integration between the two metaphors occurred when teachers integrated elements of acquisition and participation without much difficulty or frustration.

Table 2.2

Keywords Used to Explore Statements About the Acquisition and Participation Metaphors

Acquisition Metaphor	Participation Metaphor
Basic units of knowledge that can be accumulated, refined, and combined to form cognitive structures	Actions or activities that refer to learning, although there is no mention of "concept" or "knowledge".
Knowledge acquisition, concept development, ownership	Legitimate peripheral participation, apprenticeship
Knowledge is a kind of entity	The context is rich and dynamic, learning is 'using' knowledge
Keywords: knowledge, concept, conception, idea, notion, misconception, meaning, sense, schema, fact, representation, material, contents, reception, acquisition, internalization, appropriation, transmission, attainment, development, accumulation, grasp	Keywords: situatedness, conceptuality, cultural embedding, social mediation, practice, discourse, communication, participation, community

All results of the analysis can be found in Table 2.3. Three of the twelve teachers made no references to acquisition or participation whatsoever (teachers numbers 1, 3, and 9). Nine of the twelve teachers did make references to acquisition and/or participation. These nine teachers can be divided into four categories: acquisition (teachers numbers 2 and 8), participation (teachers numbers 10 and 11), juxtaposition of acquisition and participation (teachers numbers 4 and 12) and integration of acquisition and participation (teachers numbers 5, 6, and 7).

Table 2.3

Participants' Quotes from the Feedback Session Indicating the Use of the Participation and Acquisition Metaphors

Teacher	Quote	Classification
2	They are learning a trick, but they do not pursue the knowledge.	Acquisition
2	You have to build a foundation to begin with, before you reach a level of understanding. So, you have to discuss certain matters within a classroom setting, and when they have a foundation to build on, you can exploit that with guidance. I am in favor of a certain amount of classroom instruction.	Acquisition
4	But certain elements are already determined? What the pupils have to learn is stated in the final exams and the physical environment, well, that is a classroom.	Acquisition
4	I think that German is a beautiful example. I don't think [the pupil] has learned new words, but she has learned that she can trust herself within these situations.	Participation
4	I do value content knowledge a great deal, yes.	Acquisition
4	That was mainly the [subject] matter I would like them to learn, and which they have learned. That was less focused on the learning process that involved only tasks they had to execute. [...] Next year, I have to make sure that they follow the procedure, and if they do not finish it in time, they have to finish it at home. [..] This year I gave them the responsibility, and as a result there were pupils who got behind. [...] The learning content has to be challenging and interesting for the pupils in order for them to master it. [...] After all, they have to know this for their exams. Whether they like it or not, they have to process it.	Acquisition
5	"I think it is important for them to accumulate building blocks. It cannot be, and we have to be aware of that, that we focus only on competences and skills. I have noticed this a little bit this year, and it is important that we do not disregard knowledge. I think we have to bring up knowledge, and that we have to discuss this in a classroom setting. Certainly, facts are very important."	Juxtaposition
5	If you value certain elements, you make sure that it is in your program.	Integration
6	I think we can roughly say that regarding content knowledge and in a cognitive way pupils learned less about certain subjects during these project weeks. And regarding skills or generic competences they learned a lot. Because the pupils said: "I learned a lot there", that also means they want to learn more than just content knowledge. I want to learn other things too, and I can show that now. So, that is probably a nice mix, to sometimes learn knowledge and with that knowledge you can develop your competences further.	Integration
6	On the other hand, here we constructed a lot of knowledge already, and that's knowledge we already have.	Acquisition
6	I consider pupils to be intelligent enough to master the learning content. It goes wrong with the more general skills: motivation, planning, organizing, keeping appointments, that sort of thing. And those are very important elements. Within SSVE they speak about competences, which are essentially the skills we already teach them.	Juxtaposition
7	It is important to give pupils their own responsibility for exploring solutions. The traditional educational system focused on providing guidance to pupils who struggle. Provide them with possible solutions. It is more important that pupils explore possible solutions themselves. Search for solutions yourself: 'What do you think is appropriate in this situation?'	Integration

Table 3 (continued)

Participants' Quotes from the Feedback Session Indicating the Use of the Participation and Acquisition Metaphors

Teacher	Quote	Classification
8	That content knowledge will come by itself. When you have the skills, you can look things up.	Acquisition
10	You can learn all the things you want to, but if you do not use it, it stops.	Participation
10	But they need a moment where they can experience that [the relevance of completing assignments]	Participation
11	But if you put them into a real setting, for example [context] or [context], then I do think that this [working at competences] is more prevalent. [..] The experiences they tell, they still think they're great, but also the learning content they have learned there.	Participation
11	I would like them to think about it and try to make connections. Just a little bit further than usual. [...] I brought so much stuff, and it would be a real shame to make use only of the book. Yes, I want to stimulate them to look beyond the book. [...] I want to see depth. [...] To go beyond the basic learning content. Maybe that is because I am from the business side, the practice. Then you have another perspective.	Participation
12	But I really wonder whether they actually gain more knowledge than during regular weeks.	Juxtaposition
12	We've just finished a project week [..] We did not prepare them on the subject matter, so to speak. [..] And if you see what they learned, than they have learned a lot within a week, regarding competences, professional work attitude, and so forth. But if you focus on knowledge, you know, regarding content it was really bad.	Juxtaposition
12	Being at the vacation park and the assignments that we made, in my opinion this was primarily designed for skills. In addition, I cannot say that the pupils at the vacation park suddenly portrayed a lot of content knowledge that they acquired there.	Juxtaposition

Note: No references to elements of acquisition or participation were made by three teachers (subjects 1, 3, and 9).

Teachers who referred to the acquisition metaphor only, saw learning as an accumulation of knowledge, with knowledge understood as entities or facts that can be internalized or acquired. An example of an acquisition quote is:

"You have to build a foundation to begin with, before you reach a level of understanding. So, you have to discuss certain matters within a classroom setting, and when they have a foundation to build on, you can exploit that with guidance. I am in favor of a certain amount of classroom instruction."

(Teacher nr 2, Acquisition)

Teachers who mentioned the participation metaphor only, viewed learning as an action or activity that takes place in interaction with a specific environment or context. An example of a participation quote is:

"But if you put them [pupils] into a real setting, for example [context] or [context], then I do think that this [working on competences] is more prevalent. [..] The experiences they tell, they still think they're great, but also the learning content they have learned there."

(Teacher nr 11, Participation)

Teachers who saw juxtaposition of acquisition and participation valued elements of both metaphors; they did not, however, view these elements as integrated. Acquisition and participation in their opinion went together problematically. An example of a juxtaposition quote is:

"We've just finished a project week [..] We did not prepare them on the subject matter, so to speak. [..] And if you see what they learned, then they have learned a lot within a week, regarding competences, professional work attitude, and so forth. But if you focus on knowledge, you know, regarding content it was really bad."

(Teacher nr 12, Juxtaposition)

Finally, teachers who saw integration of acquisition and participation tried to make interrelations between both metaphors. Acquisition and participation in their opinion could go together successfully. An example of an integration quote is:

"I think we can roughly say that regarding content knowledge and in a cognitive way pupils learned less about certain subjects during these project weeks. And regarding skills or generic competences they learned a lot. Because the pupils said: "I learned a lot there", that also means they want to learn more than just content knowledge. I want to learn other things too, and I can show that now. So, that is probably a nice mix, to sometimes learn knowledge and with that knowledge you can develop your competences further."

(Teacher nr 6, Integration)

The interview episodes presented above indicate a struggle that these teachers go through. They need to find a balance between guiding pupils in the acquisition of basic knowledge and providing the necessary measures aimed at the development of competences. On the one hand, knowledge is valued for offering depth and insight; teachers assume that through classroom instruction and tight guidance of pupils these can be accomplished. On the other hand, more attention is required for developing pupils' skills and attitudes; participation in authentic contexts and self-regulated learning are getting more important in this connection.

Conclusions and Discussion

This study was carried out among teachers of different disciplines who cooperated in a teachers' workplace to develop career-related projects for pupils, instructional materials, and teaching methods aimed at creating competence-based PVSE. We focused on two questions: 1) Which concepts and principles from the cognitive apprenticeship model can be identified in teachers' action theories, and, 2) Are there any demonstrations in their action theories of a tension between the acquisition and participation metaphors? In answer to the first question, teachers mentioned mostly elements from the cognitive apprenticeship model associated with teaching methods and sociological context characteristics. The learning content and sequencing dimensions, however, were mentioned less frequently.

These findings can be explained by the emphasis placed in the study on the development and implementation of competence-based PVSE. Teachers were probably more focused on teaching methods and sociology because they felt these elements were missing in their daily practice. It is also possible that learning content and sequencing elements are simply not as prominent in the individual action theories of teachers overall, having been educated by following the sequence and learning content of textbooks related to their specific subject themselves.

Regarding the second question, nine of the twelve teachers demonstrated some form of tension between the two metaphors in their individual action theories. On the one hand, knowledge acquisition is valued by teachers and they believe a structured approach and tight guidance are crucial to ensure the necessary depth and insight. On the other hand, teachers devote much attention to developing pupils' skills and competences by having them participate in authentic settings. Those who focus on acquisition experience the tension of increasingly having to develop their pupils' competences as well. Teachers who emphasize participation experience the tension of providing their pupils with enough basic knowledge to be able to function effectively within the community. Those who juxtapose acquisition and participation see the potential benefits of both metaphors but experience tension in having to combine them successfully. And, finally, teachers who attempt to integrate both metaphors experience the constant tension of having to negotiate an educational system not yet fully geared to such innovations. In summary, both metaphors seem to be prominent and relevant to most teachers in their every-day work environment.

Most teachers, then, find themselves torn in some form of tension between acquisition and participation. As a result, teachers often feel pressurized into thinking that classroom instruction is no longer desirable; however, they still value it as an essential part of their teaching. The highlighted tensions between acquisition and participation refer to the belief that the role of teachers in the future will shift from transferring information to guiding learning processes (Verloop, 1995). It is important for pupils, however, to build a well-organized knowledge base with strong interconnections so as to be able to make meaningful associations between relevant learning contents (e.g., Boekaerts & Simons, 1993; Prawat, 1989; Taconis, 1995). Such a knowledge base is an essential precondition for effective problem solving and competent behavior in various settings (Van der Sanden, 2004). Pupils often experience difficulties interlinking overall conceptual knowledge with overall procedural knowledge. In addition, pupils find it hard to make connections between codified knowledge (i.e., knowledge in books) and episodic knowledge (i.e.,

knowledge gained through experience) (Van der Sanden, 2004). If practical lessons and theoretical lessons remain separated in school, it will continue to be difficult for pupils to make meaningful relationships between these different types of knowledge (Slaats, Lodewijks, & Van der Sanden, 1999).

The various dimensions of the cognitive apprenticeship model provide interesting starting points for an integrated approach to acquisition and participation. This is even more crucial in vocational education, where learning to participate in a professional community is equally important to the acquisition of important concepts and principles. In vocational education, there is an awareness of domain-specific knowledge and learning strategies as well as a recognition of situated learning by a community of practitioners, which together provides an excellent setting for integrating these two frameworks. The cognitive apprenticeship model embodies elements from the acquisition and participation metaphors. Were this model to be used for designing vocational education in future, however, the 'learning content' dimension should be adjusted for competence-based teaching programs. The development of attitudes, learning to establish one's career (Geurts, 2003), and the development of a professional identity (Meijers & Wardekker, 2001) should be made more prevalent, as well as the integration of these various elements into pupils' personal competences. Teachers appeared to value these elements; the concept map of teacher number 5, for example, showed: *The ultimate goal is to guide pupils into balanced/joyful adulthood and that they can find their way in life and can use their qualities to their advantage!* And teacher number 9 said in the semi-structured interview: *I hope they are better prepared for the labor market than before. I hope they are better prepared for further education. But by far the most I hope they will find themselves and deem they have learned a lot.* These illustrative quotes indicate that teachers value the orientation on diverse vocations and further education, and, eventually, that pupils leave PVSE well prepared for their future professional career.

Despite the different data sources used for the analysis no distinctive, crystallized action theories emerged at the individual teacher level. This may in part

be due to methodological reasons, as not all subjects were able to participate in all four data sources. It may also, however, raise the question of whether such individual action theories indeed predict performance. Many researchers (e.g., Barnett & Hodson, 2001; Beijaard & Verloop, 1996; Bryan, 2003; Connelly, Clandinin, & Fang He, 1997) assume that teachers hold such relatively stable beliefs; however, to what extent their personal theories influence teachers' behavior is open for question. We would argue (with Van der Krogt, 2007) that teachers' behaviors are also influenced by workplace factors (e.g., the classroom setting). These contextual cues are possibly more powerful factors influencing teachers' behaviors than their individual action theories are. After class, teachers may take some time to think about the content, teaching methods, sequence, and sociology aspects of teaching in a more reflective way. Further research should focus on the extent to which teachers' behaviors are influenced by their individual action theories relative to other personal and contextual factors.

Another relevant topic for future research concerns the activities that teachers undertake to further their own professional development and to learn about their new roles in competence-based teaching programs aimed at integrating pupils' knowledge, skills, and attitudes. There is a multitude of research questions associated with this issue. How do teachers take on these new roles? Which problems do they experience in doing so? What professional development activities do they carry out in this connection? What exactly do they learn from participating in a knowledge community, interacting with teachers from other disciplines, student teachers, teacher educators, and researchers? How can contributions of pupils serve as input for these communities? Answers to these questions are needed ultimately to help teachers deal with the new and sometimes conflicting demands they face in competence-based educational systems.

The results of the present study can help schools and knowledge communities of teachers become aware of the tensions involved in introducing competence-based education as well as of the opportunities available to integrate the inherent notions of

knowledge acquisition and participation in professional practices. The study suggests that elements and principles of the cognitive apprenticeship model may be related to these two metaphors. The 'content' and 'sequencing' dimensions could be employed as acquisition elements in designing competence-based education, while participation in the knowledge community could be established with the elements and principles of 'methods' and 'sociology'. This study also offers examples and a practical use of the various dimensions of the cognitive apprenticeship model that can be used in constructing and evaluating learning environments. In addition this study can help schools and knowledge communities of teachers make sense of the ways in which acquisition and participation are related in their own school practice. Ultimately, this study may serve as one example of how empirical research can both draw on, as well as inform teacher education, school development, and continuing teacher development.

Appendix A:
Data Matrix of the Analysis of the Concept Maps (CM), Semi-Structured Interviews (I), Cued Interviews (CI) and the Feedback Session (FS).

Subject Nr	Data Source	Content				Teaching Methods						Sequence			Sociology				
		Domain knowledge	Heuristic Strategies	Control Strategies	Learning Strategies	Modeling	Coaching	Scaffolding and fading	Articulation	Reflection	Exploration	Increase complexity	Increase diversity	Global before local skills	Situated learning	Culture of expert practice	Intrinsic motivation	Exploiting cooperation	Exploiting competition
1.	CM					x	x	x											
	I	x				x		x	x		x		x		x				
2.	CM																		
	I	x		x		x					x				x	x	x		
	FS	x																x	
3.	CM		x	x			x	x	x	x	x							x	x
	CI			x			x	x											x
4.	CM																	x	x
	I							x			x								x
	FS	x			x														
5.	CM						x	x		x	x		x						
	I	x			x	x			x							x		x	
6.	CM									x					x	x			
	I			x			x	x	x		x				x	x	x	x	
	FS		x			x		x				x							
7.	CM		x							x						x	x	x	
	I				x		x		x		x				x	x		x	
8.	CM							x	x		x				x	x	x	x	
	CI			x			x	x	x						x		x		
	FS				x									x	x	x		x	
9.	I					x	x	x	x		x				x	x		x	
10.	CI						x	x	x										
	FS													x					
11.	CI	x			x		x		x		x				x			x	
	FS													x					
12.	CI		x		x	x	x	x	x		x				x				
	FS			x										x	x				
Total quotes (subjects)		**6** **(5)**	**4** **(4)**	**6** **(5)**	**6** **(6)**	**7** **(6)**	**10** **(9)**	**13** **(10)**	**11** **(10)**	**5** **(5)**	**11** **(11)**	**1** **(1)**	**2** **(2)**	**4** **(4)**	**12** **(8)**	**9** **(6)**	**7** **(6)**	**12** **(9)**	**0** **(0)**

Note: If the Feedback Session is not present, no references were made by that subject during the Feedback Session regarding concepts of the Cognitive Apprenticeship Model

Chapter 3

Teachers' Individual Action Theories about Competence-Based Education:

The Value of the Cognitive Apprenticeship Model[2]

Dutch prevocational secondary schools are reforming their educational programs to make them more competence-based. This reform has substantial implications for the roles played by teachers. Yet, little empirical research has been conducted on teachers' processes of competence development in vocational settings. This study explores teachers' individual action theories regarding the introduction of competence-based prevocational secondary education. The cognitive apprenticeship model provides a conceptual framework for addressing this issue. The research questions addressed here are: How do teachers value elements of the cognitive apprenticeship model in designing and delivering competence-based prevocational secondary education?; and, What individual action theories do teachers have regarding competence-based prevocational secondary education? The study was designed in two phases. In the qualitative phase, interviews and concept map techniques were used, while the quantitative phase employed a questionnaire. Teachers valued elements of the cognitive apprenticeship model differently, and suggested two additional features: a custom-made educational approach and the professionalization of teachers.

The Dutch secondary education system is highly multi-faceted, ranging from short, very practical prevocational and vocational education (comparable to the American vocational high schools) to a six-year academic stream that permits entrance to a university study. Having finished primary school, approximately 60 per cent of Dutch pupils attend prevocational secondary education (PVSE), which precedes senior secondary vocational education (SSVE). Learners usually enter higher levels of vocational education (ages 15-18) through PVSE (ages 12-15). PVSE combines general education and vocational preparation, divided into four sectors: care and welfare, engineering and technology, business and economics, and agriculture. In PVSE learners can choose between a more practically based or a more theoretically oriented track. This form of education, however, does not conclude with a vocational certification, which means that learners have to continue to SSVE in order to become certified. Having finished SSVE, learners can choose to either enter higher professional education – comparable to vocational colleges or polytechnics – or receive a vocational certification. In this article, we focus on PVSE.

In the Netherlands, PVSE and SSVE are increasingly making their educational programs more competence-based. Instead of concentrating on knowledge acquisition, they attempt to help learners acquire a combination of knowledge, skills, and attitudes that they will need in their chosen vocation (i.e., competences). This process has substantial implications for the school as a learning environment as well as for the role of teachers employed by schools. Teachers are expected to support their pupils by helping them integrate knowledge, skills and attitudes into personal competences (Onstenk, 1997). Most teachers currently employed within PVSE and SSVE were not trained to fulfill the new roles that competence-based learning environments require of them. Furthermore, teachers are now required to work together with colleagues from different disciplines in designing competence-based education, an approach that is new to them. These changes require teachers to fulfill different roles than they fulfilled previously. Since there is little time available for them to acquire these teaching competences in more traditional in-service learning

50

settings (e.g., courses), therefore, they must acquire them on the job. These competences require a change in both teachers' views and the individual action theories that underlie their behavior in instructional contexts (Argyris & Schön, 1978; Van der Krogt & Warmerdam, 1997; Van der Sanden & Teurlings, 2003).

In research on teacher learning, there is increasing interest in the often implicit and experience-based knowledge, subjective working concepts, and professional concepts regarded as the foundations of teachers' teaching strategies (Beijaard, Verloop, & Vermunt, 2000; Oosterheert, 2001; Van Velzen, 2002). This study, therefore, explores the individual action theories that teachers have regarding teaching. More specifically, we study the ways that teachers give meaning to their new roles, the problems they experience, and the learning processes they are involved in developing more competence-based learning environments. This study takes a social-constructivist perspective on learning and teaching where learning is viewed as giving meaning to experiences in a process of continuous progressive re-contextualization (Guile & Young, 2003; Van der Sanden & Teurlings, 2003). The basis for this research lies in the *cognitive apprenticeship model*, which holds that learners should be guided in their process of development from novices to masters in a complex domain (Collins et al., 1989).

The cognitive apprenticeship model specifies four dimensions for designing powerful environments, namely: content, method, sequence, and sociology (summarized in Figure 3.1). The first dimension, *content*, holds that it is important to differentiate between different types of knowledge, such as conceptual, factual, procedural, and strategic knowledge. To become a master within a certain domain it is important to pay attention to problem-solving strategies and heuristics, especially regarding how to acquire these types of knowledge. The second dimension, *method*, provides guidelines for teaching methods (i.e., modeling, coaching, scaffolding and fading, articulation, reflection, and exploration) to help learners acquire and integrate cognitive and meta-cognitive strategies for constructing, using, and managing knowledge. These methods provide learners with the opportunity to observe, engage

in, and invent or discover expert strategies in their context. This enables them to see how these strategies fit together with their factual and conceptual knowledge and how to make use of the variety of resources in social and physical contexts. *Sequence*, the third dimension, prescribes how to identify changing learning needs and how to adjust the sequence and structure of learning materials accordingly. There are three principles central to sequencing, namely: increasing complexity, increasing diversity, and acquiring global skills before local skills. These principles are important for learners to help them integrate and generalize knowledge and complex skills. The final dimension, *sociology*, refers to the sociology of the learning environment, a critical dimension that has received increasing attention lately (e.g., Loyens, Rikers, & Schmidt, 2006; Sluijsmans, Straetmans, & Van Merriënboer, 2008). Important elements of this dimension are situated learning, culture of expert practice, promoting intrinsic motivation, exploiting cooperation, and exploiting competition. Here it is important that learners encounter different levels of expertise in a situated and authentic environment; they need to engage immediately in the authentic context and become part of the community of practitioners.

Content	Domain knowledge	The conceptual and factual knowledge and procedures explicitly identified with particular subject matter.
	Heuristic Knowledge	Generally effective techniques and approaches for accomplishing tasks that might be regarded as "tricks of the trade"
	Control strategies	The control of the process of carrying out a task, which includes regulation strategies for managing, guarding and control strategies for the execution of tasks.
	Learning strategies	Strategies for learning any of the other kinds of content which are described above.
Methods	Modeling	Showing an expert carrying out a task so that learners can observe and build a conceptual model of the processes that are required to accomplish the task.
	Coaching	Observing learners while they carry out a task and offering hints, scaffolding, feedback, modeling, reminders and new tasks aimed at bringing their performance closer to expert performance. Coaching focuses on the enactment and integration of skills.
	Scaffolding and fading	A kind of cooperative problem solving effort by teacher and learner in which the expressed intention is for the learner assume as much of the task on his own as possible, as soon as possible and also the gradual removal of supports until learners are on their own.
	Articulation	Any method of getting learners to articulate their knowledge, reasoning or problem-solving processes in a domain.
	Reflection	Enabling learners to compare their own problem solving processes with that of an expert, other learners and ultimately, an internal cognitive model of expertise.
	Exploration	Pushing learners into a mode of problem-solving of their own. This is essential for learners to learn how to frame questions or problems that are interesting and that they can solve.
Sequence	Increase Complexity	The construction of a sequence of tasks and task environments such that more and more of the skills and concepts are necessary for expert performance are required.
	Increase diversity	The construction of a sequence of tasks in which a wider and wider variety of strategies or skills are required.
	Global before local skills	Sequencing lessons such that learners have a chance to apply a set of skills in constructing an interesting problem solution before they are required to generate or remember those skills.
Sociology	Situated learning	Carrying out tasks and solving problems in an environment that reflects the multiple uses to which their knowledge will be put in the future.
	Culture of expert practice	Creating a learning environment in which the participants actively communicate about and engage in the skills involved in expertise.
	Intrinsic motivation	Creating environments or tasks in which learners perform because they are intrinsically related to an interesting goal, rather than an extrinsic reward.
	Exploiting cooperation	Having learners work together in a way that fosters cooperative problem solving. This is a powerful motivator and a powerful mechanism for extending learning resources.
	Exploiting competition	Comparing the output of the learners, not between products, but between the processes of learner problem solving.

Figure 3. 1. Definitions used in the cognitive apprenticeship model by Collins, Brown and Newman (1989)

There has been little empirical research conducted on processes of competence development in practical settings, especially concerning teachers in vocational education. The current study explores the individual action theories of teachers regarding competence-based secondary education. As such, it is a critical first step in identifying teachers' individual action theories to gain insight into how they view their roles and the boundary conditions within competence-based PVSE. Insight in these competence-development processes can provide a theoretical foundation for further research. In addition, these insights can be used to support student teachers as well as in-service teachers involved in professional-development trajectories. The study described in this article focuses on the following questions:

How do teachers value elements of the cognitive apprenticeship model in designing and delivering competence-based prevocational secondary education?

What individual action theories do teachers have regarding competence-based prevocational secondary education?

Methods

Context of the Study

This study was carried out in two phases. Firstly, we report on a relatively small-scale qualitative phase, conducted at one PVSE school in the Netherlands. This school was in the process of preparing a more vocationally oriented program aimed at better preparing and supporting learners choosing the sector in which they will eventually work (i.e., care and welfare; engineering and technology; business and economics; agriculture). The teachers who participated in the qualitative phase designed 'project weeks' where the traditional school subjects were integrated into a project focusing on one of the sectors. The 'project weeks' were aimed at designing new forms of education integrating general and vocational subjects and embedding

new pedagogic measures within a more authentic context. These weeks were a first attempt at establishing a more competence-based curriculum.

Secondly, we report on a somewhat larger-scale quantitative phase, in which teachers who were also in the process of developing new competence-based programs participated. These schools participated in a consortium subsidized by the Dutch government, in which they were given the opportunity to experiment with new curricula, pedagogies, and assessment programs.

Participants

In the qualitative phase, 12 teachers (3 women, 9 men) from one PVSE school in the Netherlands participated. Their teaching subjects included business and economics, mathematics, physics, chemistry, biology, information technology, history, geography, English, German, French, and Dutch.

In the quantitative phase, 42 teachers (3 women and 39 men) from 34 schools filled in the questionnaire. These teachers taught a wide range of both vocational and general subjects, varying from physical education to Dutch.

Materials and Procedure

The qualitative phase made use of concept mapping, cued interviews, and semi-structured interviews. *Concept mapping* is a technique for deriving the meaning that a person attributes to several concepts from a graphical reproduction of the coherence between propositions within a certain domain, which is generated by that particular person (Seezink & Van der Sanden, 2005). Of the 12 teachers involved in this phase, 9 generated concept maps which they submitted two weeks prior to the start of the 'project week'. The instructions given to them were:

> *Write down as many concepts as you can on the cards related to developing competence-based PVSE, and if necessary, you may use small sentences (please make sure it is clear what you mean). Place every new concept or small sentence on a different card. Divide and arrange these cards on the large sheet of paper, so that it is logical for you. Cards that are related to*

each other should be placed closer to each other than cards that are not related. Draw lines between the cards that you think are related. You can draw as many lines as you want. Write alongside each line the relationship between these cards. If possible, try to transform the lines into arrows so that the direction of the relation is apparent. If you come across concepts that you think are important, please add them to the cards. Underline the most important concepts.

Of the 12 teachers, 5 participated in *cued interviews* during a 'project week' on location - in this case a vacation park - where they functioned as coach. During this 'project week', video recordings were made of the counseling meetings, with special attention to the interaction between learners and coach. The duration of these recordings was approximately 30 minutes. These video recordings were used as a basis for a cued interview in which they were asked: Why did you use this intervention? Why did you decide to intervene at this particular moment? Why did you intervene like this? What did you think of the reactions of the learners? and What did you think about your own reaction? The interviews were recorded on an audiocassette and were later transcribed and analyzed.

Not all teachers were present for the 'project week'. The teachers who were absent could not take part in the cued interview. These teachers did not function as coach during the 'project week', but did participate in designing the tasks for and the preparation of this week. For this reason, 7 of the 12 teachers took part in a *semi-structured interview* in the same week that the cued interviews took place. The interview questions were based on literature about individual action theories of teachers (Henze, Van Driel, & Verloop, 2007b; Van de Sande, 2007) and were adapted to the vocational education context. The semi-structured interviews contained the following questions: How do you see the role of the teachers within this innovation? How or in what way do you interpret your own role in this innovation? How do you (think you) support learners in their tasks? Which elements do you find important within the curriculum? What do you want to achieve during these 'project weeks'? Which educational measures do you think are still desirable? What do you expect of

learners when they finish their education at this school? and What do you think learners have learned during the 'project weeks'? After analyzing the results, a feedback session was organized with the teachers who participated in the qualitative phase to discuss the most significant results. This feedback session was recorded on an mp3 device and was transcribed and analyzed.

In the quantitative phase, the authors developed a questionnaire, which was partially based on the results of the qualitative phase as well as on seven exploratory interviews with teachers who were randomly selected from the consortium. The questionnaire consisted of six conceptual scales, namely: *content, teaching methods, sequence, sociology of the learning environment, custom-made educational approach, professionalization of teachers.* The questionnaire consisted of a number of instructional measures that teachers can implement, which are potentially relevant for promoting the development of learners' competences in PVSE. For each of these, the teachers were asked to answer three questions, namely: How important is this instructional measure for realizing competence-based education?, To what extent do you think this instructional measure is applicable in your own situation?, and To what extent do you apply this instructional measure within your own classroom environment? The answers were given on a 5-point scale, with a score of 1 being "I do not deem this important/applicable/applied", a score of 3 being neutral, and a score of 5 being "I deem this important/applicable/applied".

Before analyzing the questionnaire results, the reliabilities of the conceptual scales were determined. Table 3.1 shows the Cronbach's Alpha scores of all scales, which were rated as moderately to highly reliable (range = .67-.87), as well as examples of the items.

Table 3.1

Reliability Analysis for the Different Conceptual Scales

Scale	Cronbach's Alpha	Number of Items	Illustration Item
Content	.69	4	Aiding pupils in forming a well-organized knowledge base.
Teaching Methods	.87	9	Providing lots of examples of problem-solving to pupils.
Sequence	.72	5	Gradual increasing complexity within learning tasks.
Sociology of the Learning Environment	.84	10	Building relations between educational arrangements and future job opportunities.
Custom made Educational Approach	.87	7	Using input of pupils for organizing education
Professionalization of Teachers	.67	5	Giving teachers the opportunity to develop themselves further.

Analyses

The data gathered in the qualitative phase (i.e., the cued and semi-structured interviews) were transcribed into text documents. Subsequently, the concept maps and transcriptions were explored with the goal of identifying concepts and principles that referred to elements of the cognitive apprenticeship model. Figure 3.1 formed the foundation for these analyses. Furthermore, the data were explored for expressions used by the teachers that recurred more than three times and that referred to elements in the learning environment that teachers wanted to change.

For the data gathered in the qualitative phase, one-sample *T*-tests and descriptive statistics were used to analyze the results. The perceived importance was analyzed using one-sample *T*-tests. If the scores of the teachers were significantly higher than 3, it was assumed that the measures were viewed by them as being important. Finally, a paired-samples *T*-test was used to gain insight on whether teachers valued some scales significantly higher than other scales. To reduce the

chances of a type I error, Cronbach's Alpha was divided by the number of scales used in the pairwise comparison (Shaughnessy, Zeichmeister, & Zeichmeister, 2000).

Results

The results are described in two sections. First, the results of the qualitative phase are addressed and then the results of the quantitative phase.

Qualitative Phase

The analyses of the concept maps and the interviews indicated that various dimensions of the cognitive apprenticeship model play a role in the individual action theories of the 12 teachers. Overall, references to *teaching methods* and the *sociology* of the learning environment are more prominent in teachers' individual action theories than *content* and *sequence*. Within the *teaching methods* dimension: 'coaching', 'scaffolding and fading', 'articulation', and 'exploration' are quite prominent. *Teaching methods* such as 'modeling' and 'reflection' come to the fore less frequently. An example regarding 'coaching' within the dimension *teaching methods* is:

> *"They [the pupils] neglected to write things down where they agreed upon. […] They want to go by bicycle or they want do it for so and so long, but they did not write it down. That is why I said to [name]: now write down what has been said".*

> (Cued Interview, Subject nr 03, Teaching Methods; Coaching)

Here, the teacher reminds pupils that it is important for them not only to make decisions, but also to record those decisions. The teacher, thus, is observing the pupils and giving them hints, reminders, and so forth to bring their performance closer to expert performance. Another aspect prevalent in the analyses is that teachers require pupils to articulate what they are going to do and why. An example:

> *"[...] But then I [the teacher] do not want to say: guys you need to do this step by step. However, I try to accomplish through a little discussion that they realize: what is important?*

What do we [the pupils] want to know when other groups are presenting? What do others want to know about us?"

(Cued Interview, Subject nr 12, Teaching Methods, Articulation)

Less prominent within *teaching methods* were expressions regarding 'modeling' and 'reflection'. However, teachers do think this is important. An example of 'modeling' is:

"Well, if you [the pupils] go to the CEO, how do you go about? What do you do? Well I [the teacher] would say, Dear mister [name], listen, we have interviewed some people… No! Who did you interview? You have interviewed tourists and personnel. You should say exactly what you did. Not just, well we asked some people…"

(Cued Interview, Subject nr 12, Teaching Methods, Modeling)

Regarding the *sociology* dimension, teachers value different elements. Many teachers emphasized the power of learning within an authentic and rich context. Some examples are:

"I [the teacher] would take the pupils more out of the school, the classroom. Into the real world. […] Yes, that is when a subject becomes real."

(Interview, Subject nr 06, Sociology, Situated Learning)

"They [the pupils] think that they can group the people in groups of 75, 75, and 50. Nevertheless, if people can sign themselves in, these numbers are going to change, because the reality is different from what they are thinking now. Therefore, I [the teacher] try to make that clear that it is not realistic. And then they end up having costs and calculations that do not fit."

(Cued Interview, Subject nr 03, Sociology, Situated learning)

Not only the authentic context is valued by teachers, but also exploiting cooperation between pupils is an important aspect of the *sociology* component.

"[I value] the way pupils work together. Everyone has to do his share within the group."
(Interview, Subject nr 07, Sociology, Exploiting cooperation)

"The focus was more on the process, less on the product, but more on the process. Working together to establish something, having meetings together, discussing subjects [...]"
(Interview, Subject nr 04, Sociology, Exploiting cooperation)

References to the *content* component are less frequent, although teachers are rather focused on their own subjects. Some examples are:

"[...this year] we hardly had any time for didactic innovations regarding your own subject. That is what you have to do in your own time. [...] I hope we can develop more next year for our own subjects"
(Interview, Subject nr 01, Content, Domain knowledge)

"[...] Regarding our subject, they studied [subject material]. [...] Those are predominantly the [subject] matter that I [the teacher] wanted them to study, and they did study that."
(Interview, Subject nr 04, Content, Domain knowledge)

Regarding *sequence* only one reference was made within the interviews:

"[...] and also regarding the integration of subjects, there are opportunities. [...] More as a domain[..]"
(Interview, Subject nr 01, Sequence, Increase diversity)

After exploring the data for expressions regarding the cognitive apprenticeship model, we went through the data looking for expressions that recurred more than three times and referred to elements in the learning environment that teachers wanted to change. Within this specific innovation, the school focused

on helping pupils choose among job opportunities and among further education programs. Teachers expressed that they think a *custom-made educational approach* is more suitable at this level of education, so as to give learners more freedom in developing their capacities and interests, and that pupils also want to develop their own curriculum more. Some examples are:

"Because these pupils say 'I have learned a lot over there', it might be that they are saying: 'I [the pupil] want to learn more than only knowledge. I [the pupil] want to learn other things. And that I [the pupil] am able to show that now."

(Feedback session, subject nr 06, Custom-made educational approach)

"I have experimented this year with the fact that pupils could choose when they wanted to make their examinations. [...] It is difficult to organize that properly. The focus of the experiment was to see whether pupils worked harder if they could choose their own examination times."

(Interview, Subject nr 01, Custom made educational approach)

Another element that became prevalent was the need felt and expressed by teachers to receive further training in order to be able to provide better support for learners. Some examples are:

"[...] But also for us [teachers] it is difficult to provide coherence within the content of the projects. [...] Providing this coherence is also something we [the teachers] have to learn."

(Feedback session, subject nr 08, Professional development)

"[...] There are situations that I [the teacher] find myself in the situation that I have to say to the pupil: 'well, I don't know this either, but shall we look for solutions together?'"

(Feedback session, Subject nr 10, Professional development)

To determine whether these two aspects were also valued by other teachers involved in designing competence-based PVSE, they were developed into conceptual scales within the questionnaire designed for the quantitative phase.

Quantitative Phase

The quantitative phase consisted of a questionnaire with six conceptual scales: content, teaching methods, sequence, sociology of the learning environment, custom-made educational approach, professionalization of teachers. The first four scales were based on the cognitive apprenticeship model and the last two scales were added based on the results of the qualitative phase. The descriptive statistics - presented in Table 3.2 - give insight into how teachers valued the different scales with respect to their importance, their applicability in vocational education, and the extent to which they were actually applied in the teachers' own school environment. On the one-sample T-test all conceptual scales were found to have scores significantly higher than 3 (M ranging from 4.19 to 4.47; $p < .001$).

To investigate whether some scales were rated significantly higher than other scales, a paired-samples *T*-test was conducted. To reduce the chances of a type I error, Cronbach's Alpha was divided by the number of scales used in the pairwise comparison, restricting it to .008 ($\alpha/6$) (Shaughnessy et al., 2000). Pairwise comparison of the 'importance'-scores regarding the paired-samples *t*-test revealed significant results for *teaching methods* and *sociology* ($t(36) = 3.98$; $p < .001$) and *sequence* and *sociology* ($t(36) = 3.92$; $p < .001$) and *sequence* and *custom-made educational approach* ($t(36) = 2.98$; $p = .005$). This means that *sequence* was rated as significantly more important than *sociology* and *custom-made educational approach* were. In addition, *teaching methods* was rated as significantly more important than *custom-made educational approach* was.

Table 3.2
Hierarchical Representation of the Descriptives (N = 37)

Importance	Applicable in general prevocational education	Applied within own school environment
Sequence (*M* = 4.46; *SD* = .42)	Sequence (*M* = 3.93; *SD* = .71)	Sequence (*M* = 3.76; *SD* = .81)
Teaching Methods (*M* = 4.38; *SD* = .54)	Teaching Methods (*M* = 3.86; *SD* = .81)	Teaching Methods (*M* = 3.71; *SD* = .81)
Professionalization of Teachers (*M* = 4.32; *SD* = .57)	Professionalization of Teachers (*M* = 3.74; *SD* = .89)	Professionalization of Teachers (*M* = 3.50; *SD* = .92)
Content (*M* = 4.27; *SD* = .60)	Content (*M* = 3.68; *SD* = .83)	Sociology (*M* = 3.30; *SD* = .74)
Sociology (*M* = 4.19; *SD* = .51)	Sociology (*M* = 3.60; *SD* = .74)	Content (*M* = 3.27; *SD* = .90)
Custom-made Educational Approach (*M* = 4.19; *SD* = .68)	Custom-made Educational Approach (*M* = 3.50; *SD* = .96)	Custom-made Educational Approach (*M* = 3.02; *SD* = .92)

Pairwise comparison of the 'general PVSE applicability'-scores regarding the paired-samples t-test revealed significant results for *teaching methods* and *sociology* ($t(36) = 3.71$; $p = .001$), *teaching methods* and *custom-made educational approach* ($t(36) = 3.44$; $p = .001$), and *sequence* and *sociology* ($t(36) = 3.98$; $p < .001$) and *sequence* and *custom-made educational approach* ($t(36) = 4.19$; $p < .001$). This means that in the perception of teachers, *sequencing* as well as *teaching methods* are valued to be significantly more applicable within competence-based PVSE than aspects such as *sociology* and *custom-made educational approach* are.

Pairwise comparison of the 'applied within own school environment' scores regarding the paired-samples *t*-test revealed significant results for *content* and *teaching methods* ($t(36) = -4.50$; $p < .001$), *content* and *sequence* ($t(36) = -5.01$; $p < .001$), *content* and *custom-made educational approach* ($t(36) = 2.99$; $p = .005$), *teaching methods*

and *sociology* (*t*(36) = 6.76; *p* < .001), Teaching Methods and *custom-made Educational Approach* (*t*(36) = 6.69; *p* < .001), *sequence* and *sociology* (*t*(36) = 5.77; *p* < .001) and *sequence* and *custom-made educational approach* (*t*(36) = 7.32; *p* < .001), *sociology* and *custom-made educational approach* (*t*(36) = 3.02; *p* = .005) and finally *custom-made educational approach* and *professionalization of teachers* (*t*(36) = -4.82; *p* < .000). This means that in the teachers' perceptions, elements such as *sequence*, *teaching methods*, and *professionalization of teachers* are applied more within their own school environment than measures of *sociology*, *content*, and *custom-made educational approach* are. To clarify the results in a more hierarchical way, Table 3.2 provides an overview with the scores of each scale.

Conclusions and Discussion

The aim of this study was to explore the individual action theories of teachers regarding competence-based secondary education. To gain insight into these individual action theories we used qualitative and quantitative techniques.

The first research question focused on how teachers valued elements of the cognitive apprenticeship model in designing and delivering competence-based education. In the qualitative phase, we found that different aspects of the cognitive apprenticeship model were valued by teachers as being important. In the qualitative phase, the teachers focused on *teaching methods* and *sociology*. Expressions about *content* and *sequence* were less frequent and less diverse in the interviews and the concept maps. This can probably be explained by the fact that *teaching methods* and *sociology* were viewed as the focus of the innovative project, which was underpinned by a social-constructivist pedagogy. Because of this focus, it is plausible that matters concerning *content* and *sequence* were less prominent. Another aspect is that PVSE-teachers often use and follow schoolbooks that describe the content and sequence of the subject matter in a detailed way, and are often not involved in curriculum

development themselves. They might - incorrectly - think that they cannot change this, and, therefore, *content* and *sequence* are not very prominent in their individual action theories. In the quantitative phase, however, *sequence* and *content* were valued as highly important features of competence-based PVSE, as were *teaching methods* and *sociology* (all mean scores > 4.19 on a 5-point scale). This means that when teachers are cued by a questionnaire, then they do value these elements. Looking at the applicability and actual application scores of the four scales, however, teachers give much lower scores for 'applicable within general PVSE' and even lower for 'applied within own school environment'.

The second research question explored the individual action theories that teachers have regarding competence-based PVSE. The qualitative phase revealed that teachers valued all elements and principles of the cognitive apprenticeship model; however, they also felt a need to provide a more custom-made educational approach for their pupils. Also, they indicated that they wanted to pay more attention to their own professional development. As a consequence, in the quantitative phase we included these two scales based on the outcomes of the qualitative phase. These added *custom-made educational approach* and *professionalization of teachers* scales revealed that teachers value these aspects highly as well (with mean scores of, respectively, 4.32 and 4.19). With regard to the applicability of these measures, however, teachers are more negative.

Another outcome is that in both phases, teachers expressed the desire to receive more professional development. Teachers need to be situated at the centre of the innovation, since they are the ones who must execute the innovative reform measures (Garet, Porter, Desimone, Birman, & Yoon, 2001; Knapp, 1997). Although teachers often support high standards for teaching, many teachers are not capable of implementing and sustaining these high standards (Lambert, 2003).

Current in-service education and training programs are often found to be insufficient for long-term results. In addition, these programs are often designed and developed by others; therefore, teachers are not involved in designing their own

professional development trajectory in accordance with their own perceived learning needs. Schools, then, choose to implement short-term training courses that often do not fit the needs of the teachers (Atay, 2008). As teachers have not been trained to provide competence-based education, they need to acquire these skills in the workplace (Lohman, 2006). These short-term training courses seem to be perceived as "stop-gap" measures, and, therefore, usually do not yield the needed results. However, literature has shown that on-the-job professional development programs are most beneficial when they are long-term programs, focused on individual learning wishes and needs, and are linked to the curricula being implemented (e.g., Garet et al., 2001).

In this study, qualitative and quantitative analyses were used to explore the individual action theories of PVSE teachers regarding competence-based secondary education. In taking this multi-method approach, we aimed to avoid the different pitfalls associated with each method. A limitation of this research, however, is the limited number of subjects, for the qualitative phase as well as the quantitative phase. A recommendation would be to replicate the quantitative phase with a larger sample. Another limitation is that the qualitative phase was originally set up as an authentic explorative study, meaning that it was assumed that if teachers chose to speak of certain elements, then they considered those elements to be important. However, we may not conclude that if they did not discuss certain elements, those elements were necessarily unimportant for them. Even if an element is not mentioned, it can still be deemed important.

There is a growing interest in professional development designed for groups of teachers from the same school, department, or grade level (Seezink & Van der Sanden, 2005). Professional development designed for groups of teachers has a number of potential advantages, for example, by engaging the teachers in joint professional development, they become able to integrate what they learn with other aspects of their instructional context. By focusing on a group of teachers who preferably collaborate with regional businesses, teacher training institutes, and

further educational institutes, such professional development may help sustain the changes in practice over time and, therefore, be more effective. Where an emphasis on professional development may help contribute to a shared professional culture, collective participation in the same activity can provide a forum for debate and improved understanding, which increases teachers' capacity to grow. Finally, a change in classroom teaching involves both individual learning and organizational learning; therefore, establishing an innovation-supportive culture can facilitate individual change efforts (Bottrup, 2005; Knapp, 1997).

Chapter 4

The Role of Schools' Perceived Human Resource Policies

in Teachers' Professional Development Activities:

A Comparative Study of Innovations towards

Competence-Based Education[3]

The change towards competence-based education has implications for teachers as well as school management. This study investigates which professional development activities teachers undertake related to this change and how these activities differ among schools with various HR policies. Semi-structured interviews with 30 teachers in nine schools with different HR policies were held and analyzed both qualitatively and quantitatively. Findings show that teachers undertake activities in five categories: *maintaining knowledge base, applying and experimenting, reflection, collaboration,* and, *activities indirectly related to teaching practice.* Two developments in the human resource policies of schools are investigated, first, an obligatory HR policy of integral personnel management and second, a voluntary HR policy of a integrative approach of **S**chooling of teachers, **O**rganizational development of schools and teacher training institutes, **A**ction- and development-oriented research, and **P**rofessional development of teachers. Not all teachers were familiar with their schools' HR policies and only some were involved in implementing them. Results show that teachers' professional development activities are relatively similar across schools with different HR policies.

In European countries, competence-based education has acquired a strong foundation (Weigel et al., 2007). The need for competence-based education is created by the perceived gap between what is learnt in schools and the demands of the work society (Biemans et al., 2004). As a result, Dutch schools of prevocational secondary education (PVSE) are innovating their educational programs. In order to provide competence-based PVSE these schools are establishing stronger links among the demands of society, work organizations, and vocational education (De Bruijn, 2004; Mulder, 2002). Within competence-based education, students become more responsible for their own learning processes (De Bruijn et al., 2005; Van der Sanden, 2004; Van Velzen, 2002), deciding within certain boundary conditions what, how, when, and where they learn in order to develop themselves further (De Jong, Hoekstra, Van der Wel, & Wensink, 2005). With the implementation of competence-based education, teachers can no longer adhere to their former roles within a knowledge transmission model, and, hence, they need to change their teaching practice towards knowledge construction (Vermunt & Verschaffel, 2000). Competence-based education requires different competences of teachers; therefore, they will need to undertake professional development activities (Seezink, Poell, & Kirschner, 2009).

Besides the continuous changes within educational practice however, there are other reasons why teachers may engage in professional development activities. According to Blau et al. (2008), employee development is driven partially by a need for employee mobility. Motives for continuing professional development can be described as inward focused (e.g., aiding one's co-workers and improving practice within the organization) or outward focused (e.g., improving or supporting one's own occupation or profession) (Blau et al., 2008).

Teachers' Professional Development Activities

There is a general consensus that learning to teach is a lifelong process (e.g. Atay, 2008; Clandinin, 2008; Lohman, 2006). The term 'professional development',

however, has many interpretations and definitions. Bergen and Van Veen (2004), for example, state that professional development of teachers can be characterized as warranting future suitability of individual teachers regarding the practice of their profession. Van Driel (2006) also views professional development as a way of learning on the job over time; however, he stresses the importance of an organized method. The definition used in the present study is derived from Kallenberg (2004) and focuses on the development and improvement of professional behavior in work-related situations related to daily teaching practice. Kwakman (1999, 2003b) distinguishes among four categories of professional development activities, the first three of which are individual in nature: *reading, experimenting,* and *reflection*. Reading is aimed at acquiring new knowledge and skills. Experimenting is the application of new developments and insights into teaching practice. Reflection aims at the evaluation of their teaching performance. *Collaboration* was added as a fourth category because, although individual learning can be very helpful, teachers often point out that they learn a lot from the interaction with others (Kwakman, 1999, 2003a).

Schools' Human Resource Policies

The change towards competence-based education has implications not only for teachers but also for school management. In former times, school management in the Dutch educational system was not concerned with teaching practice but rather focused on managerial and organizational aspects only. As (Van Driel, 2006) has noted, this resulted in a clear separation between teaching practice and management practice. Also, personnel management within secondary schools was an underdeveloped area. Often this was restricted to recruiting new teaching staff and managing teachers' professional development gained little attention (Van Driel, 2006). This all changed as a result of two developments in the human resource (HR) policies of schools, which will be elaborated upon below.

Integral Personnel Management (IPM). The first development was that, in 2005, the Dutch Ministry of Education, Culture, and Science decided that every school management within Secondary Education needed to introduce a system of integral personnel management (IPM) (Kervezee, 2006). As a result, secondary schools are now obliged to have an integrated human resource management system in place. Although IPM is currently gaining more interest from schools, it is still far from common practice in Secondary Education.

IPM combines four types of HR policy: 1) personnel management, for example, administration, planning, managing absenteeism; 2) organizational policy, for example, organizational structure, culture, employee participation; 3) the use of personnel instruments, for example, for recruitment, professional development, appraisals; and 4) competence management, for example, relating the development of teaching staff to organizational needs (SBO IPB; 2005). These four aspects need to be integrated in three ways. First, vertical alignment between the goals of the school and the development of its teachers is needed. Second, there needs to be horizontal alignment among the four aspects of IPM, so that they reinforce rather than interfere with one another. And third, all those concerned (management as well as teaching staff) need to be involved in implementing IPM. Van Driel (2006) states that school management plays a critical role in schools' HR policies.

HR Policies Based on the SOAP Principle. The second development is that, since the mid-1990s, Dutch schools have been granted more autonomy from the government (Seezink & Van der Sanden, 2005). As a result, some schools have decided to introduce innovative HR policies. A number of Dutch schools have recently been experimenting with an application of the so-called SOAP principle (Seezink & Van der Sanden, 2005) in their HR policies. The focus of the SOAP principle is to establish stronger relationships among activities in the fields of **S**chooling of teachers, **O**rganizational development of schools and teacher training institutes, **A**ction- and development-oriented research, and **P**rofessional development of teachers.

72

Central to the SOAP approach is the formation of knowledge communities of researchers, student teachers, teacher educators, teachers, and employees of other work organizations (Engeström et al., 2004). Van der Sanden (2004) stresses the importance of these knowledge communities for initiating and organizing learning. Establishing stronger relationships among the SOAP associates provides them with opportunities to connect development at the individual level with that at the organization level. For example, teacher educators interacting with teachers on a frequent basis in order to create a new competence-based teaching program, which not only helps their individual learning but also brings about changes in what their institutions offer their respective clienteles.

Study Aim and Research Questions

Both IPM and the SOAP approach attempt to influence the professional development of teachers substantially. Continuing teacher development is needed to prepare teachers for the new roles associated with the introduction of competence-based education. School management can, for instance, promote collaboration among teachers and encourage them to undertake specific professional development activities. It can promote new initiatives, rearrange work situations, and create facilities for teachers, so that these teachers can define their personal development goals, share knowledge, and provide or receive coaching.

Schools are attempting to use their HR policies, government enforced (IPM) as well as voluntary and experimental (SOAP), to make sure teachers engage in the necessary professional development. What is unclear as yet, however, is exactly which role schools' HR policies play in the professional development of their teachers. The aim of this study, therefore, is to shed light on the professional development activities that PVSE teachers undertake to be able to play new roles in competence-based education programs and whether these activities differ among

schools with various HR policies. The following research questions will be investigated:

1. Which professional development activities do PVSE teachers undertake?

2. To what extent are PVSE teachers able to identify elements of IPM and the SOAP approach in their schools' HR policies?

3. To what extent do the professional development activities of PVSE teachers differ among schools with different perceived HR policies?

Methods

Sample

This study included 30 PVSE teachers from nine different schools. Six schools were at the time participating in an experiment to introduce the SOAP principle in their HR policies (hereafter referred to as 'SOAP schools'); the other three schools did not participate in a SOAP experiment ('non-SOAP schools'). The sample contained 17 men and 13 women. The average age was 43.7 years (sd = 9.0) and the average teaching experience was 13.3 years (sd = 10.3). The subjects taught by the teachers were both general and vocational in nature. In the SOAP schools nine men and six women participated, with an average age of 44.4 years (sd = 8.52) and an average teaching experience of 14.4 years (sd = 10.19). In the non-SOAP schools eight men and seven women participated, with an average age of 43.1 years (sd = 9.48) and an average teaching experience of 12.3 years (sd = 10.67).

Instruments

Data were gathered using semi-structured interviews. An interview protocol was constructed consisting of a general introduction, background questions (sex, age), questions about the implementation of the SOAP principles, questions about teachers' professional development activities, and questions about school support for

these activities. As a starting point for the questions about teachers' professional development activities the categories put forward by Kwakman (1999, 2003a) were used, that is, *reading, experimenting, reflection*, and *collaboration.*

Procedure

Subjects were invited individually to participate in the study. They received a general outline of the main purpose of the study. Interviews took place in April, May, and June of 2007, using secluded areas in the school buildings where the teachers were employed. There were two interviewers who were assigned randomly to the subjects. The interviews were recorded with informed consent on a digital voice recorder. After the analysis the researchers performed member checks (Flick, Von Kardoff, & Steinke, 2004), meaning that subjects received an abstract of the interview summarizing all information gathered, classified into categories. All thirty subjects received an abstract of their own interview and were given the opportunity to react if they felt that the information or interpretation were incorrect. Relevant information collected during the member checks was used for further analysis. In the SOAP schools all PVSE teachers approached for the interviews did participate. All three non-SOAP schools participated in some type of innovative project other than SOAP, a selection criterion enforced by the researchers to match the general interest in innovation to the schools in the SOAP sample. In the non-SOAP schools teachers were invited to participate by the contact of the school, usually the principal or a board member. All teachers were free in their decision to participate or not. One teacher in a non-SOAP school decided not to participate in the interview study.

Analysis

Data analysis was based on the constant comparative method (Miles & Huberman, 1994). The interviews were fully transcribed, after which the coding procedure started. Core concepts derived from literature were coded into different sub-categories. The analysis for the first research question regarding professional

development activities (Kwakman, 1999, 2003a) was mostly but not purely deductive in nature. Sub-categories of emerging concepts were added if necessary. The analysis for the second and third research questions regarding perceived HR-policies in schools was more explorative in nature. Key coding categories were based on SBO IPB (2005) for IPM and on Seezink and Van der Sanden (2005) for the SOAP approach.

Both interviewers coded the transcripts individually, based on the categories of core concepts. Almost all their scores matched and any differences in coding scores were thoroughly evaluated. There was hardly any disagreement about which text fragment to place in which coding category; however, in a few instances one researcher had scored a text fragment that the other researcher had omitted, or vice versa. After discussing the differences, the transcripts were scored by both researchers individually a second time in order to accomplish a final version.

Data reduction was then accomplished by grouping codes into various categories. Finally, the information gained from performing these procedures was presented in a data matrix (available from the authors of this paper). The result was a total of 11 main categories sub-divided into 62 sub-categories. There were five main categories of professional development activities with 35 sub-categories, one main category of IPM with 11 sub-categories, and five main categories of the SOAP approach with 16 sub-categories. The three research questions were answered by calculating the frequencies of the various professional development activities as well as the elements of HR policies perceived by teachers; their professional development activities were then compared between SOAP schools and non-SOAP schools and between schools with different perceived IPM policies.

Results

Teachers' Professional Development Activities

The first research question focused on the professional development activities undertaken by PVSE teachers. The interviews showed that the teachers had different conceptions of professional development. Twelve teachers (40%) did not give a specific answer when asked about their view of professional development. Seven teachers (23%) thought of professional development as one specific activity, mostly participating in courses or training sessions. Subsequently asked which activities they undertook in order to work on their professional development, teachers' answers could be divided into five main categories, four of which are derived from Kwakman (1999, 2003b): *reading, experimenting, reflection,* and *collaboration*. The category *reading* proposed by Kwakman was broadened to *maintaining knowledge base*, as teachers indicated undertaking a wider variety of activities besides reading. The category *experimenting* was broadened to *applying and experimenting*, as it includes, for example teaching study skills to pupils and preparing classes. Finally, we added a new category '*activities indirectly related to teaching practice*' (see Table 4.1 for an overview of results).

The most prevalent professional development activities within the first category *maintaining knowledge base* were participating in courses or training, followed by monitoring current educational affairs. Other, less prevalent activities were: visiting (educational) publishers, using internet as a resource, and reading newspapers.

In the second category *applying and experimenting,* most prominent were experimenting with teaching methods, undertaking new ways of teaching, and developing new teaching materials. Less prevalent activities were teaching study skills to pupils and preparing teaching practice.

The most prevalent activities within the third category *reflecting* were collegial consultation and evaluating one's own teaching practice. The term collegial consultation means that teachers discuss teaching practice together, particularly (problem) situations. Evaluating means the evaluation of school projects or specific lessons (by the teachers themselves). Less prevalent activities were receiving coaching, receiving feedback from pupils, and providing coaching for other teachers.

Within the fourth category *collaborating*, most prominent were participating in collaborative projects, exchanging or discussing ideas, participating in meetings, working within a core team or in a subject team, and finally, collectively preparing teaching practice. Less prevalent were co-teaching and implementing innovations.

The most prevalent activities within the category *activities indirectly related to teaching practice* were providing pupil guidance and tasks not directly related to giving classes (e.g., creating a school paper, building a school's internet site, and selecting schools for possible internships). Less prevalent in this category were activities such as management tasks and organizing extracurricular activities.

To control for within-subject recurring activities, we also looked at the numbers of teachers participating in the various (sub-) categories of professional development activities. For example, within the category *maintaining knowledge base*, 28 teachers were responsible for a total of 108 unique activities, whereas only 63 unique *reflecting* activities were conducted by 26 teachers. Results are summarized in Table 4.1.

Schools' Perceived Human Resource Policies

The second research question focused on the extent to which PVSE teachers were able to identify elements of IPM and the SOAP approach in their schools' HR policies. First, we explored whether teachers were familiar with the term IPM. Ten teachers (33%) did not know about it. Twenty teachers (67%) who did know the term did not always know what it meant or how the school employed IPM. Their knowledge about IPM was often limited to formative or summative appraisal

Table 4.1

Professional Development Activities Undertaken by PVSE Teachers in Five Main Categories (N = 30)

Main Category	Activities Undertaken	Teachers n (%)	Activities n (%)
Maintaining Knowledge Base	Participating in courses or training	27 (90%)	75 (69%)
	Monitoring current educational affairs	13 (43%)	16 (15%)
	Studying professional literature	6 (20%)	9 (8%)
	Visiting of publishers	3 (10%)	4 (4%)
	Using internet as resource	2 (7%)	2 (2%)
	Reading newspapers	2 (7%)	2 (2%)
	Studying basic literature	0 (0%)	0 (0%)
	Total number of activities in category:		*108 (100%)*
	Total number of teachers in category:	*28 (93%)*	
Applying and Experimenting	Experimenting with teaching methods	25 (83%)	33 (34%)
	Undertaking new ways of teaching	23 (67%)	33 (34%)
	Developing teaching materials	16 (53%)	22 (23%)
	Teaching pupils study skills	4 (13%)	5 (5%)
	Preparing classes	4 (13%)	4 (4%)
	Constructing tests and evaluation	0 (0%)	0 (0%)
	Total number of activities in category:		*97 (100%)*
	Total number of teachers in category:	*28 (93%)*	
Reflecting	Collegial consulting	18 (60%)	25 (40%)
	Evaluating	13 (43%)	13 (21%)
	Supervising internships	13 (43%)	13 (21%)
	Receive feedback of pupils	6 (20%)	6 (9%)
	Receive coaching	4 (13%)	4 (6%)
	Providing coaching	2 (7%)	2 (3%)
	Total number of activities in category:		*63 (100%)*
	Total number of teachers in category:	*26 (87%)*	
Collaborating	Participation in collaborative projects	28 (93%)	34 (26%)
	Exchange or discussing idea's	20 (67%)	24 (18%)
	Participating in meetings	17 (57%)	23 (18%)
	Working within core / subject teams	16 (53%)	18 (14%)
	Collectively preparing teaching practice	9 (30%)	10 (8%)
	Co-teaching within one classroom	7 (23%)	7 (5%)
	Implementing innovations	6 (20%)	6 (4%)
	Providing assistance	4 (13%)	4 (3%)
	Sharing teaching materials	2 (7%)	2 (2%)
	Coordinating	2 (7%)	2 (2%)
	Receiving assistance	0 (0%)	0 (0%)
	Telling stories	0 (0%)	0 (0%)
	Total number of activities in category:		*130 (100%)*
	Total number of teachers in category:	*30 (100%)*	
Activities Indirectly Related to Teaching Practice	Providing pupil guidance	11 (37%)	19 (41%)
	Tasks not related to giving classes	8 (26%)	16 (35%)
	Management tasks	6 (20%)	6 (13%)
	Extracurricular activities	5 (17%)	5 (11%)
	Total number of activities in category:		*46 (100%)*
	Total number of teachers in category:	*19 (63%)*	

meetings and drawing up a professional development plan (PDP). Table 4.2 summarizes teachers' free expressions related to IPM. Although twenty teachers claimed to know the term IPM, twenty-five teachers actually mentioned certain elements of IPM in the interviews. Apparently, teachers did not always recognize elements of IPM as such. Eighteen teachers experienced Professional Development Plans (PDPs) as being part of IPM, with the implementation of PDPs varying between just putting a plan on paper to undertaking a program over several years with an assigned coach to ensure progress. Sixteen teachers mentioned formative or summative appraisal meetings, although they often said this did not happen on a regular basis, usually only once or twice. The involvement of teachers in implementing IPM was limited (27%). Often, this task belongs to team leaders, subject group managers, board members and management teams.

Table 4.2
Elements of IPM that Teachers Associated Freely with IPM (N = 30)

	Teachers	Expressions
IPM Elements	n (%)	n (%)
Professional development plan (PDP)	18 (60%)	18 (27%)
Appraisal meetings	16 (53%)	16 (24%)
Integral approach	10 (33%)	11 (17%)
Involvement of teachers	8 (27%)	8 (13%)
Personnel officer	5 (17%)	5 (7%)
Promoting expertise	3 (10%)	4 (6%)
Recruitment	2 (7%)	2 (3%)
Health and safety regulations	1 (3%)	1 (1%)
Job appraisal	1 (3%)	1(1%)
Career Guidance	1 (3%)	1(1%)
Total Number of IPM Elements		67 (100%)
Total Number of Teachers	22 (73%)	

Subsequently, it was investigated to what extent teachers identified the four elements of the SOAP principle: Schooling of teachers, Organizational development of schools and teacher training institutes, Action- and development-based research, and Professional development of teachers. Since an integral approach to these four elements should be part and parcel of the SOAP principle, this was also investigated

in the analysis. Table 4.3 shows teachers' perceptions of the extent to which of the SOAP principle were present in their schools' policies. Most present in school policies as perceived by teachers were the elements of professional development and organization development, with less emphasis on research and far less attention being given to schooling of teachers. Nine teachers (30%) indicated that all four aspects of SOAP were present, fourteen teachers (47%) mentioned three aspects, six teachers (20%) mentioned two aspects and one teacher (3%) mentioned only one aspect. No teachers perceived an integral approach involving all four SOAP elements. Ten teachers (33%) perceived an integral approach to some extent, but mostly involving only two out of four aspects. Data about the integral approach of the elements of the SOAP principle are not in Table 4.3.

Table 4.3
Teachers' Perceptions of Elements of the SOAP Principle Present in Their Schools' Policies (N = 30)

Elements of the SOAP Principle Perceived	SOAP schools (n=15)	Non-SOAP schools (n=15)
	Activities n (%)	Activities n (%)
Schooling of Teachers	8 (40%)	12 (60%)
Organization Development	33 (43%)	44 (57%)
Action / Development-Based Research	11 (35%)	20 (65%)
Professional Development of Teachers	19 (49%)	20 (51%)

Different Professional Development Activities among Schools with Different HR Policies

The third research question focused on the extent to which the professional development activities of PVSE teachers differed among schools with different perceived HR policies. Regarding the perception of IPM, on the basis of our interviews we could identify three groups: ten teachers had never heard of IPM (and, therefore, cannot experience an integrated approach to IPM), ten teachers were

familiar with IPM but did not experience an integral approach, and, finally, ten teachers were familiar with IPM and did experience an integral approach.

Main results with regard to the professional development activities undertaken are that teachers not familiar with IPM scored lowest of the three groups on *applying and experimenting*, and, *activities indirectly related to teaching.* Teachers who were familiar with IPM but did not experience an integral approach scored highest in *collaborating, maintaining knowledge base,* and *applying and experimenting*; however *reflecting* scored lowest. Teachers familiar with an integrated approach to IPM scored highest of the three groups on *reflecting* and *activities indirectly related with teaching,* but lowest on *collaborating* and *maintaining knowledge base.*

In order to determine whether the differences among the three groups were statistically significant we performed a Pearson's χ^2 test for the numbers of activities, which revealed a significant difference on *maintaining knowledge base* ($\chi2(2)=8.72$, *p*<0.05). All other categories did not reveal any significant differences ($\chi^2_{(2)}$ varied between 0.57 and 2.67). The results are summarized in Table 4.4. We also conducted Pearson's χ^2 tests for the numbers of teachers as well as for the 'activity to teacher ratios'; however, no significant differences emerged from these analyses.

Table 4.4
Number of Professional Development Activities Undertaken by Three Groups of Teachers (N = 30)

Main Category of Activities Undertaken	Teachers Not Familiar with IPM (n=10)	Teachers Familiar with IPM (n=20)	
		No Integral Approach to IPM Perceived (n=10)	Integral Approach to IPM Perceived (n=10)
Collaborating (n=130)	42 (32%)	51 (39%)	37 (28%)
Maintaining Knowledge Base (n=108)	37 (34%)	48 (44%)	23 (21%)
Applying and Experimenting (n=97)	28 (29%)	39 (40%)	30 (31%)
Reflecting (n=63)	19 (30%)	17 (27%)	27 (43%)
Activities Indirectly Related to Teaching (n=46)	13 (28%)	16 (35%)	17 (37%)

Regarding the differences between SOAP schools and *non*-SOAP schools, Table 4.5 presents the professional development activities of PVSE teachers at the main category level (results at the activity level can be obtained from the authors). Some differences in are apparent between the two school types; however, these differences in professional development activities are only slight. The category *reflecting* shows the clearest differences, in that, these activities were much more frequent in *non*-SOAP schools compared to SOAP schools.

There are only marginal differences in the categories *maintaining knowledge base, collaboration*, and *applying and experimenting*. Regarding *activities indirectly related to teaching practice*, more teachers within SOAP schools claimed to pursue these compared to teachers in non-SOAP schools; however, the number of activities undertaken is roughly similar. Pearson's χ2 tests for activities, teachers, and 'activity to teacher ratios' did not reveal any significant differences among the two groups.

Table 4.5
Differences between SOAP / Non-SOAP Schools in the Number of Professional Development Activities Undertaken by Teachers, per Main Category (N = 30)

Main Category of Activities Undertaken	SOAP Schools		Non-SOAP Schools	
	Teachers n (%)	Activities n (%)	Teachers n (%)	Activities n (%)
Collaborating (n=130)	15 (100%)	59 (45%)	15 (100%)	71 (55%)
Maintaining Knowledge Base (n=108)	15 (100%)	59 (55%)	13 (87%)	49 (45%)
Applying and Experimenting (n=97)	15 (100%)	49 (51%)	13 (87%)	48 (49%)
Reflecting (n=63)	11 (73%)	27 (43%)	14 (93%)	36 (57%)
Activities Indirectly Related to Teaching Practice (n=46)	11 (73%)	24 (52%)	7 (47%)	22 (48%)

Conclusions and Discussion

This study was conducted among Dutch PVSE teachers in order to shed light on their professional development activities and to explore whether these activities differ among schools with different perceived HR policies. As for the first research question, 40% of the teachers did not give a specific answer when asked about their view of professional development. The professional development activities that they undertook could be categorized in *collaborating*, closely followed in prevalence by *maintaining knowledge base*, and *applying and experimenting*, then *reflecting* and finally *activities indirectly related to teaching practice*.

The second research question focused on the extent to which PVSE teachers were able to identify elements of IPM and SOAP within their schools' HR policies. Although schools are obliged by the Dutch government to have integral personnel management as part of their HR policies, 33% of the teachers were not familiar with this term. Teachers perceived fewer elements of IPM and SOAP, and less integration within both of these HR policies, than might be expected given that IPM is now compulsory and SOAP is a voluntary effort on the part of their schools. Also, very few teachers (27%) were involved in implementing these HR policies in their schools.

The third research question investigated whether there were any differences in teachers' professional development activities among schools with different perceived HR policies. Not many differences emerged from the analyses. The level of familiarity of teachers with IPM did make a difference to the professional development category *maintaining knowledge base*. The differences between SOAP and non-SOAP schools were only marginal.

Theoretical Implications

Initially, we were not completely sure whether the professional development categories proposed by Kwakman (1999, 2003a) were appropriate, because of the

diversity and unique characteristics of the PVSE setting. Analyzing the activities conducted by PVSE teachers showed, however, that the clusters formulated by Kwakman were meaningful, although some categories were renamed and a fifth category was added (i.e., *activities indirectly related to teaching practice*). One may argue that the latter activities do not contribute directly to the professional development of teachers, although teachers view them as a part of it. Although these activities differ greatly in nature, they often require specialized skills and an invitation by colleagues or school board members. Teachers with an inward-focused motivation would seem more likely to get involved in these kinds of activities, as they pertain mostly to school-bound tasks (Blau et al., 2008). Further research is needed to investigate the relevance and prevalence of our additional fifth category.

Some researchers (Beijaard & Verloop, 1996; Oosterheert, 2001; Van Velzen, 2002) have argued that teachers' practical theories or individual action theories play a crucial role in their teaching. It can be expected that these theories play a role in teachers' professional development activities as well (Van der Krogt, 2007). Teachers holding more elaborate and explicit professional development theories are more aware of their specific fields of expertise as well as their knowledge gaps. There could thus be a relationship between the number and diversity of professional development activities mentioned by teachers, on the one hand, and the extent to which their practical theories or individual action theories are crystallized, on the other hand (Seezink & Van der Sanden, 2005). Here, again, further research is necessary.

With increasing attention being paid to human resource policies within educational institutions, various HR instruments also have made their entrée within schools. Many of these instruments focus on integrating organizational development with continuing teacher development. Few empirical studies so far, however, have addressed the issue of how teachers perceive their schools' HR policies and instruments. The present study shows that neither government obligation nor voluntary school participation are sufficient in themselves for HR policies to become

visible and meaningful to many teachers, let alone be integrated into their daily teaching practice.

The Dutch educational system has a rich, but also rather problematic, history of implementing educational reforms (e.g., the 'independent-study centre' and 'basic (secondary school) curriculum' reforms, or in Dutch: 'studiehuis' and 'basisvorming') that were not communicated very well to the field. A critical evaluation of these educational reforms by the Dijsselbloem committee (initiated by the Dutch government) concluded that the government intruded on pedagogical and didactical grounds, took too little time for implementing the reforms and overburdened education with new ambitions (Dijsselbloem, 2008). Such badly prepared educational reforms frustrate teachers, who may become less ready to change and more critical towards educational reforms as a result.

Our study showed that few teachers are involved in implementing HR policies. In the context of ill-conceived educational reforms described above, teachers, therefore, become even more focused on daily practice and less on organizational, professional, or political developments. This argument is in line with Grieves and Hanafin (2005), who concluded that HR policies within schools in the United Kingdom seem to be undervalued and left to untrained personnel. They argued, and rightly so, that IPM should be managed by HR professionals in order to avoid ambiguity and overly pragmatic decisions taken by line managers.

Teachers' professional development activities in the present study were roughly similar for the SOAP context and the non-SOAP context. One may ask why some schools participate in SOAP (being a voluntary HR policy) in the first place. A possible explanation is that these schools are striving to be excellent and see SOAP practices as a unique opportunity. Another possibility is that these schools realize that they are lagging behind in the development of HR practices and, therefore, get involved with SOAP in an attempt to compensate.

At the outset of our study, we considered it plausible that teachers operating within a SOAP context would conduct more activities and also engage in a broader

range of activities compared to teachers working in a non-SOAP environment. The underlying assumption was that the SOAP context is more susceptible to innovations, so there would be more attention to professional development opportunities. We must conclude, however, that the teachers did not experience an integration of the four SOAP aspects within their schools' HR policies. Moreover, we found that non-SOAP schools also displayed some of the SOAP principles, although they did not claim this in their HR policies. A recommendation for further research is, therefore, not to identify schools on the basis of their self-proclaimed SOAP label, but to investigate the degree to which they exhibit the actual characteristics of SOAP.

Study Limitations and Practical Implications

The research design used for this study has several limitations. Only a relatively small number of teachers (n=30) participated in the study; therefore, the results cannot be generalized to all PVSE teachers unquestioningly. An attempt was made, however, to make the SOAP and non-SOAP research contexts comparable on several criteria (e.g., male-female ratio, age, experience, the selected schools needed to be involved in innovative projects, and so forth).

Another limitation is the voluntary participation of teachers in the interviews. It is possible that teachers willing to be interviewed have different characteristics than those teachers who did not want to participate. For example, the former may be more inclined to engage in professional development than the latter. Having relatively open interviews with teachers about their professional development activities also holds the pitfall that they do not express all activities they undertake.

Finally, we want to address some practical implications for PVSE teachers as well as PVSE schools. As educational institutions, schools have the responsibility to provide their teachers with opportunities for professional development. The fact that 40% of the teachers did not give a specific answer when asked about their view of professional development is at least an indication that this topic is not very high on the agenda of their schools. Teachers should be more aware of the benefits of

professional development and school organizations should be clearer about the need for professional development.

Furthermore, teachers' perceptions of their schools' HR policies (e.g., the integration of SOAP elements) seemed to differ from the HR policies intended by the schools. It is the responsibility of school management to make their HR policies clear to the teachers. If schools have highly transparent HR policies teachers will be more aware of their professional development opportunities. That in turn lowers the threshold for those teachers who want to invest in their professional development, because they are aware of the steps they have to take. Maybe teachers are apprehensive about undertaking activities that cost money and time if they do not experience support from school management. Clearly communicated and transparent HR policies in schools can make a difference in this respect.

Chapter 5

SOAP in Practice: Learning Outcomes of a

Cross-Institutional Innovation Project Conducted

by Teachers, Student Teachers, and Teacher Educators[4]

This paper reports on a case study investigating the learning outcomes at the individual and organizational level of a cross-institutional innovation project based on the SOAP approach. SOAP integrates **S**chooling of teachers, **O**rganizational development of schools, **A**ction- and development-oriented research, and **P**rofessional development of teachers. The innovation project was aimed at bringing together teachers, student teachers, and teacher educators in an alliance to design and develop new competence-based educational arrangements for pupils. An inductive qualitative analysis of 37 semi-structured interviews among the various participants revealed seven main categories of individual learning outcomes: attitudes, project design and management, collaboration, action theory, teaching practice, educational principles, and developments within secondary vocational education. Three main categories of organizational learning outcomes were identified: institution-level learning, project-level learning, and combining institution-level and project-level learning. A tension was identified between, on the one hand, the participants' individual interests in learning and personal development and, on the other hand, the need for organizational learning aimed at improving organizational processes. Although the longer-term needs for evaluation and research were often individual motives for participation, they were hindered by a short-term focus on developing and implementing new learning materials.

In recent years, schools in Dutch secondary education have been confronted with several large-scale educational reforms initiated by the government. Research into school restructuring and educational change shows that large-scale reforms often elicit concerns, worries, and resistance to change among teaching staff (e.g., Geijsel, 2001; Hargreaves, 2005; Van Eekelen, 2005). Teachers involved in educational reforms are expected to change their ways of teaching, undertake new activities, and give new meaning to their teacher roles. As a result, the views, beliefs, values, and attitudes of these teachers need to be reassessed (Seezink, Poell, & Kirschner, 2009).

Rowan (1990; 1995) proposes a commitment strategy to educational reforms. The commitment strategy focuses on supporting teachers' decision making and on enhancing teacher engagement as a tool for improving teaching quality and student achievements. According to Smith & Rowley (2005), adopting a commitment strategy enables schools to be more successful in professional development and obtain greater stability in teaching staff. In order to reduce anxiety and resistance among teaching staff it is important to take into account not only the objective characteristics of the educational reform but also the manner in which those involved attach significance to it (Geijsel, 2001).

The growing emphasis on school development associated with educational reform causes a renewed interest in teachers' competences and professional identities. Traditional approaches to teacher training are accused of being irrelevant in preparation for every-day teaching practice and, hence, in need of radical restructuring (Korthagen, Loughran, & Russell, 2006). Schools are increasingly paying attention to and becoming involved in initial teacher education as well as professional development programs. New collaborations are initiated among schools, teacher-training institutes, and universities in order to examine opportunities for linking theory and practice, for example, by enabling student teachers to participate in innovative projects to fulfill their practice-period requirements.

Individual and Organizational Learning

Viewed from a conceptual perspective, these collaborations are aimed at connecting individual and organizational learning. Individual learning is defined as "an ongoing work-related process of undertaking activities that leads to change in cognition or behavior, or both" (Meirink, 2007, p. 19). It includes becoming aware of one's implicit views and beliefs (Berings, 2006). The process of organizational learning was defined by Argyris and Schön (1996) as acquiring, processing, and storing information at the collective level. "Generally an organization may be said to learn when it acquires information (knowledge, understanding, know-how, techniques or practices) of any kind and by whatever means. (…) The generic schema of organizational learning includes some informational content, *a learning product;* a *learning process* which consists in acquiring, processing and storing information; and a *learner* to whom the learning process is attributed" (Argyris & Schön, 1996, p. 3).

The importance of individual learning for organizational learning is widely recognized (e.g., Casey, 2005; Crossan et al., 1999; Forman, 2004). Organizational learning cannot occur without individual learning. At the same time, however, organizational learning is viewed as representing more than an accumulation of individual learning experiences (Casey, 2005). Individual learning is considered a necessary but insufficient precondition for organizational learning to occur. Organizational learning has occurred when some product from collective activity has been embodied in the systems, policies, or culture of the organization (Argyris & Schön, 1996).

The SOAP Approach

This paper reports on a case study investigating the learning outcomes of a cross-institutional innovation project, which was based on an integrated approach of **S**chooling of teachers, **O**rganizational development (of schools and teacher-training institutes), **A**ction and development oriented research, and **P**rofessional development of teachers; in short, the SOAP approach (Seezink & Van der Sanden, 2005). Teachers

currently employed in vocational education are expected to change their teaching practice towards competence-based education. In moving towards competence-based vocational education, teachers are increasingly becoming involved in designing and developing competence-based curricula (Seezink et al., 2009). Having been used to delivering instructional programs provided by educational publishers, teachers are now expected to devise their own programs and play active roles in their schools' organizational development.

A number of Dutch schools have been experimenting with the SOAP approach, bringing together teachers, student teachers, and teacher educators in an alliance to design and develop new competence-based educational arrangements for pupils. In the Netherlands, school policies and actions in the fields of teacher schooling, development of schools as work organizations, educational research, and professionalization of teachers are usually considered different tasks, undertaken by different actors, with different perspectives, employed at different institutions.

Knowledge Communities and Expansive Learning

A key tenet of the SOAP approach, however, is the establishment of knowledge communities, which consist of multidisciplinary teaching staff aiming to create and implement innovative educational practices that contribute to school development (Seezink & Van der Sanden, 2005). The SOAP approach is thus in line with the commitment strategy to educational reforms advocated by Rowan (1990, 1995). In order to facilitate knowledge communities, organizational and individual (professional) development need to become major issues in schools' policies.

In establishing knowledge communities, school organizations combine individual and organizational learning processes with a view to promoting 'expansive learning' (Tuomi-Gröhn & Engeström, 2003, pp. 30-33). To generate expansive learning, a group of individuals involved in collective activity need to question existing practices, thus initiating debate and analysis of contradictions, leading to the collaborative development of new and complex communal concepts

and ideas. Resolving the contradictions may result in an alternative model. The latter needs to be examined and its implications explored preliminary to the implementation process. Subsequently a proliferation and consolidation process needs to occur and, finally, a reflective evaluation process needs to take place in order to create an expansive learning cycle (Tuomi-Gröhn & Engeström, 2003, pp. 30-33).

Outcomes of SOAP-Inspired Knowledge Communities

Creating knowledge communities according to the SOAP principle and promoting expansive learning among the participants can lead to both individual learning and organizational learning. Knowledge communities in the context of innovation projects can facilitate not only continuing professional development of teaching staff but also knowledge flows across different levels of the organization (Casey, 2005). The latter becomes a crucial factor in the educational reform towards competence-based education, which requires many alterations on the organizational level, including alternative methods of education, corresponding new ways of assessment, adjustment of classrooms, empowering teaching staff, and so forth. Individual and organizational learning, therefore, need to go hand in hand.

Establishing knowledge communities of teachers, teacher educators, and student teachers has potential advantages. First, the communities may contribute to a shared professional culture, creating better mutual understanding. A sustained change in teaching practice involves individual learning and organizational learning; therefore, it is important to create a culture supportive of educational reform that can facilitate individual change efforts (Knapp, 1997). Second, by engaging in joint professional development, teachers may be able to better transfer their learning experiences to other aspects of their instructional context (e.g., developing new educational programs), again bridging individual learning and organizational learning. Third, by introducing student teachers in innovation projects they gain a broader view of the teaching profession. Fourth, by keeping in close contact with

teachers, teacher educators are better able to keep the professional development programs they offer up to date.

Problem Statement and Research Question

This study aims to contribute to further scientific knowledge about workplace learning by teaching staff within the scope of educational innovations. We intend to provide further insight in the learning outcomes of knowledge communities, more specifically of collaborations based on partnerships among educational institutes. Research into knowledge communities, communities of practice, and communities of learners has focused primarily on formation and sustainability issues (e.g., Akkerman, Petter, & De Laat, 2008; Dooner, Mandzuk, & Clifton, 2008; Erickson, Minnes Brandes, Mitchell, & Mitchell, 2005) or on the role of these communities in facilitating learning processes (e.g., Boud & Middleton, 2003; Klein, Connell, & Meyer, 2005; Ten Dam & Blom, 2006). Empirical research into individual or organizational learning outcomes of knowledge communities, however, remains scarce (see Mittendorff, Geijsel, Hoeve, De Laat, & Nieuwenhuis, 2006; for an exception). This study, therefore, focuses on investigating the following research question: Which learning outcomes from a SOAP-inspired innovation project, both at the individual and organizational levels, can be identified?

Methods

Participants

In the Netherlands there are different types of vocational education. After primary school about 60 per cent of the pupils (ages 12-15) attain prevocational secondary education (PVSE). Subsequently, they (ages 15-18) enter senior secondary vocational education (SSVE), where they obtain their vocational qualification. The participants in the innovation project are student teachers, teachers working in PVSE schools,

teachers working in SSVE schools, and teacher educators. The participants collaborated in knowledge communities aimed at developing competence-based educational materials. Subsequently, it was intended that these materials be used in the context of their own school environments. There were 37 participants in the study, 21 of whom were men and 16 women. They had different backgrounds and worked within inter- and intra-institutional arrangements (i.e., different PVSE schools, one SSVE school, and a teacher trainer institute). The study comprised 11 student teachers, 15 teachers working in PVSE schools, 4 teachers working in SSVE schools, and 7 teacher educators. All together, their collaboration involved eight institutions (six PVSE schools, one SSVE school, and one teacher-training institute).

Data Collection

Semi-structured interviews were held with 19 teachers, 11 student teachers, and 7 teacher educators. The protocol for these semi-structured interviews included general questions (e.g., age, employment, and teaching experience) and more specific questions about the innovation project that they were working on, about their professional development activities, and about the outcomes of the project. Sample questions are: *"How would you characterize the innovation you are working on?", "How did you get involved in this innovation?", "What did you learn from participating in the project?"* and *"What difficulties did you encounter during the project and how were these resolved?"*

Procedure

During one of the regular meetings of the participants in the innovation project, the researchers held a 20-minute presentation, in which they informed the participants about the general outline and main purpose of the study. During this session the participants could raise questions or remarks about the study. Participants were approached by the management of the innovation project to participate in the study. Subsequently, the researchers made arrangements with the participants for

scheduling the interviews. Interviews took place from April through June 2007, using secluded areas in the school buildings where the teachers were employed. There were two interviewers, who were randomly assigned to interviews with the participants. The interviews were recorded with informed consent on a digital voice recorder and were later transcribed for analysis.

Analysis

Data analysis was performed using a grounded theory approach. First, the data was coded in an 'open coding' way, which means that the interviews were coded without pre-existing coding schemes; however, all relevant quotes concerning aspects of "individual learning" and/or "organizational learning" were coded. Through constant comparison of emerging codes, open coding gradually revealed a number of key dimensions, which were then used to analyze the interviews in an iterative way. Second, these dimensions were interconnected in categories through 'axial coding'. Third, we proceeded with 'selective coding', which aims to reduce redundant information and maintain the most relevant and related codes for the study questions (Glaser, 2004).

During the analysis of the individual learning construct, a distinction was made between professional development activities and learning outcomes. If teachers indicated they had learned something *by carrying out a specific activity* without making explicit what their learning outcome was, this was coded as a professional development activity. If teachers elaborated on the *content of what they had learned about* certain activities, events, or processes, this was coded as a learning outcome. As the current research project's main interest was in learning outcomes, the professional development activities were not further explored in this study.

Results

The grounded-theory analysis of the interviews revealed seven different kinds of individual learning outcomes (84 quotes across 32 participants) and three different kinds of organizational learning outcomes (46 quotes across 26 participants). The seven main categories of individual learning outcomes are: *attitudes*, *project design and management*, *collaboration*, *action theory*, *teaching practice*, *educational principles*, and, finally, *developments within secondary vocational education*. The three different main categories of organizational learning outcomes are: *institution-level learning*, *project-level learning*, and *combining institution-level and project-level learning*. Table 5.1 contains the main findings.

Individual Learning Outcomes

Attitudes. Within the first category of individual learning outcomes, participants revealed that they had become more aware of their own work attitudes. This category contains eleven quotations across nine subjects. Four sub-categories were identified: self confidence, openness to change, insight in strengths and weaknesses, and critical work attitude. Three participants mentioned an increase in self confidence (subjects 1, 2, and 20). These participants expressed feeling more secure about job contents, about functioning as a teacher, and about undertaking new ventures. Four participants (7, 20, 30, 37) mentioned being more open-minded about change as a result of the innovation project. Two participants (23, 25) claimed to have gained a better insight in their own strengths and weaknesses, for example, an increased awareness of their own teaching habits. One participant (5) talked about the development of a more critical work attitude and an increased willingness to

Table 5.1

Main Findings from the Study: Individual and Organizational Learning Outcomes (N = 37).

Individual Learning Outcomes		**84 quotes / 32 participants**
Attitudes	Self confidence	- 3 participants
	Openness to change	- 4 participants
	Insight in strengths and weaknesses	- 2 participants
	Critical work attitude	- 1 participants
	Total of quotes and participants in category	*11 quotes / 9 participants*
Project Design and Management	Project design	- 6 participants
	Project management	- 7 participants
	Total of quotes and participants in category	*13 quotes / 12 participants*
Collaboration	With individuals	- 6 participants
	With companies	- 5 participants
	With educational institutes	- 1 participants
	Total of quotes and participants in category	*16 quotes / 8 participants*
Action Theory	Making one's action theory explicit	- 7 participants
	Changing one's action theory	- 4 participants
	Confirming one's action theory	- 2 participants
	Total of quotes and participants in category	*16 quotes / 12 participants*
Teaching Practice	Didactics	- 5 participants
	Dealing with pupils	- 4 participants
	The teaching profession	- 5 participants
	Total of quotes and participants in category	*16 quotes / 13 participants*
Educational Principles	Empowering pupils	- 4 participants
	Embedding education in authentic environments	- 5 participants
	Total of quotes and participants in category	*9 quotes / 8 participants*
Developments in Secondary Vocational Education	*Total of quotes and participants in category*	*4 quotes / 3 participants*
Organizational Learning Outcomes		**46 quotes / 26 participants**
Institution-Level Learning	Quality improvement	- 4 participants
	Rearranging teacher-training curricula	- 4 participants
	Total of quotes and participants in category	*12 quotes / 8 participants*
Project-Level Learning	Emphasis on evaluation	- 12 participants
	Project adjustment	- 5 participants
	Total of quotes and participants in category	*19 quotes / 15 participants*
Combining Institution-Level and Project-Level Learning	Project-to-institution transfer	- 7 participants
	Institution-to-project transfer	- 5 participants
	Criticism being raised	- 7 participants
	Total of quotes and participants in category	*13 quotes / 11 participants*

question one's viewpoints. The following quotation illustrates the development of a critical work attitude:

> *"I think that I … by undertaking all these internships and the connections between theory and practice I do get a sense of what is usable and what is not, or how you have to do this differently or that I get a clear view of things and being critical at the same time. [...] Yes, what is in it for me, is it a good assignment and was it thought through, well so a critical view. I think that, that is my gain"*
>
> (Subject nr 5, student teacher, Individual learning outcomes – Attitudes)

Project Design and Management. The second category of individual learning outcomes deals with participants gaining insight in the organization of the innovation project. This category consists of thirteen quotes across twelve subjects. Two sub-categories were identified: project design and project management. The six participants making up the first sub-category (21, 23, 27, 28, 30, 32) had learned about the design process of the innovation project, for example, that they require a lot of investment in terms of time, effort, and energy from the participants. The seven participants in the second sub-category (9, 22, 23, 24, 25, 26, 29) indicated having learned about the management of the innovation project (e.g., in terms of decision making, scheduling, and implementation of the project). The following quotation illustrates an insight in managing the project:

> *"Yes, it is eh, very important to, eh make a very liberal planning for example, a very liberal planning. You have to try, eh, you cannot always assess this in advance, try to involve the right people."*
>
> (Subject nr 22, PVSE teacher, Individual learning outcomes – Project design and management)

Collaboration. Within the third category of individual learning outcomes, participants revealed gaining insight in collaboration processes. This category consists of sixteen quotes across eight subjects. Three sub-categories of collaboration

were identified: with individuals, with companies, and with educational institutes. Six participants (5, 12, 24, 29, 34, 35) indicated that by had learned about collaborating with individuals, for example, how to discuss ideas, articulate their arguments, react to feedback of others, and collaborate in a constructive way. Five participants (7, 22, 29, 32, 35) claimed to have learned about collaboration with companies, for instance, about the different cultures between schools and companies and how to bridge the gap, and about the commitment of companies to contribute to the out-of-school education of pupils. One participant (29) mentioned to have gained insight about the collaboration with educational institutes, especially about the curriculum for new teachers. The following quotation illustrates learning about collaboration with companies:

> *"So immediately [we went] to companies to secure the collaboration, because we think the sooner we secure this, the greater the chance of success. [...] And companies, they put this aside because this will start only after 6 months. [...] And then we think: these companies do not take into account that these projects need to go to the publisher one month ahead and then the teachers they need to prepare, and, yes, so [...] companies do not see that. Like, we are not aware of other things in companies. These are two completely different cultures and through these meetings we came closer to each other."*

(Subject nr 29, PVSE teacher, Individual learning outcomes – Collaboration)

Action Theory. The fourth category of individual learning outcomes deals with participants gaining insight in the contents of their own views and beliefs about education. This category contains sixteen quotes across twelve subjects. Three sub-categories were identified: making one's action theory explicit, changing one's action theory, and confirming one's action theory. Seven participants (13, 28, 29, 30, 31, 32, 36) indicated that participating in an innovation project made their viewpoints explicit about various elements of education, such as, contents and sequence of curricula, teaching in general, didactics, learning of pupils, and so forth. The four subjects making up the second sub-category (6, 14, 27, 29) claimed that participating

in the innovation project had changed aspects of their own action theories about various elements of education. Two participants (12, 34) mentioned that their participation had confirmed their existing action theories. The following quotation illustrates a change in action theory about education:

"To begin with what I said earlier, well you have some kind of ideal image. For example, normally I have a sequence in which several concepts follow each other and there is a certain structure in that content and now you take on a project. The new insight is that you perhaps need to let go of that, even if you find out that it is not possible to let it go entirely. Initially I also really thought that it did not matter, we are making nice education programs, full of context and that is motivating. But you can find out that there still needs to be learned something. Certain concepts are not transferable without the basics."

(Subject nr 6, teacher educator, Individual learning outcomes – Action theory)

Teaching Practice. Within the fifth category of individual learning outcomes, participants claimed to have gained a broader view of the professional practice of teaching. This category contains sixteen quotations across thirteen subjects. Three sub-categories were identified: didactics, dealing with pupils, and the teaching profession. Five participants (5, 9, 12, 20, 24) said they had learned about didactic issues, for example, designing, experiencing and/or observing (alternative) didactics. Four participants (1, 18, 22, 37) mentioned learning about characteristics of pupils, building teaching relationships, and alternative ways of guiding pupils. Five participants (1, 3, 8, 10, 14) talked about discovering new aspects of the teaching profession, for example, about teaching other subjects, about teaching other levels of education or schools, and about difficulties inherent to the teaching profession. The following quotation illustrates learning about the teaching profession:

"I have gained a better, broader view; by exchanging experiences you will get a broader view. Broader also than when you just teach, then I teach only one subject. So yes, you gain a much broader view."

(Subject nr 14, teacher educator, Individual learning outcomes – Teaching practice)

Educational Principles. The sixth category of individual learning outcomes refers to participants claiming to have learned, and sometimes to still be in the process of learning, about underlying educational principles. This category contains nine quotes across eight subjects. Two sub-categories were identified: empowering pupils and embedding education in authentic environments. The four participants making up the first sub-category (1, 19, 22, 35), mentioned questioning themselves about how to empower pupils, for example, how to trigger a professional attitude in them. The five participants in the second sub-category (7, 8, 19, 29, 34) said they had learned how to reconnect the learning-program contents with meaningful learning experiences by taking into account new educational principles. The following quotation illustrates learning about empowering pupils:

> *"Yes, well, that there is real room for thinking about what you are actually doing during teaching, that you really try to investigate how pupils acquire knowledge, how to motivate them, how to tempt them into learning."*
>
> (Subject nr 8, SSVE teacher, Individual learning outcomes – Educational principles)

Developments in Secondary Vocational Education. Within the seventh category of individual learning, three participants (4, 18, 30) claimed to have learned about the educational reforms and current developments within secondary vocational education. This category contains four quotes across three subjects. The following quotation illustrates learning about developments in secondary vocational education:

> *"For me it was a really good way to clarify for myself which development questions SSVE and PVSE schools have at the moment, in as far as they are involved in competence-based education."*
>
> (Subject nr 4, teacher educator, Individual learning outcomes – Developments in secondary vocational education)

Organizational Learning Outcomes

Institution-Level Learning. The first main category concerns organizational learning at the level of separate institutions and contains twelve quotes across eight subjects. Two sub-categories were identified: quality improvement and rearranging teacher-training curricula. The four participants in the first sub-category (1, 8, 21, 34) indicated that accreditation visits (by both internal and external committees) served as a quality check and sometimes even led to measures to improve the quality of education. The four subjects making up the second sub-category (4, 6, 17, 23) mentioned gaining a better view of developments within vocational education and using these insights as input for rearranging teacher-training curricula. The following quotation illustrates rearranging teacher-training curricula:

> *"The project itself started as a way for the teacher-training institute to gain more insight in the current processes within PVSE and SSVE schools. [...] Later, well, maybe that did not happen later, but our experience is that the project itself broadened to the teacher-training institute. And now it is used as a tool to make changes in our curricula. [...] And for the teacher-training institute as a whole, it is in my opinion very good to have close contacts with some other qualification programs in PVSE and SSVE, so that we can align our own programs and deliver teachers to their requirements."*

(Subject nr 4, teacher educator, Organizational learning outcomes – Institution-level learning)

Project-Level Learning. The second main category deals with organizational learning at the innovation-project level, among the various partners. It contains nineteen quotations across fifteen subjects. Two sub-categories were identified: emphasis on evaluation and project adjustment. The twelve participants in the first sub-category (2, 3, 6, 13, 14, 15, 17, 26, 27, 30, 35, 37) indicated that their participation in the innovation project enabled them to be more focused on evaluation. Regular teaching has a lot of short-term demands on (aspiring) teaching staff and, hence, they do not normally have the time, money, or energy to look at longer-term goals. The

emphasis on evaluation within the innovation project provided them with more opportunities to think long term. The five participants making up the second sub-category (6, 13, 32, 34, 36) mentioned that evaluation within the innovation project led to structural changes being implemented. Adjustments were made to the project along the way based on formative evaluations. The following quotation illustrates the emphasis on evaluation:

> *"Well it is nice to look at, well, does it work, the way we do it? Does that go well? How come? So through this project you get the opportunity to look deeper into this. [...] One did go well, the other did not go well, but here you have the time to look what is the problem. Because if you just do your job you do not have time for these things."*

(Subject nr 2, SSVE teacher, Organizational learning outcomes – Project-level learning)

Combining Institution-Level and Project-Level Learning. The third main category concerns the transfer of knowledge from separate institutions to the project as well as vice versa. This main category contains thirteen quotes across eleven subjects. Three sub-categories were identified: project-to-institution transfer, institution-to-project transfer, and criticism being raised. The seven participants making up the first sub-category (7, 21, 22, 26, 28, 34, 35) talked about how the educational materials developed in the project for long-term use created a snowball effect by involving other (local) teachers. The five participants in the second sub-category (3, 11, 19, 29, 35) claimed having become more aware of the opportunities for collaboration and the possible use of expertise available in their own institution with a view to aligning the partners within the innovation project. The seven participants who fell into the third sub-category (2, 3, 5, 15, 16, 30, 31) raised critical remarks about the innovative nature and sustainability of the innovation project. They expressed their doubts about just how innovative the project was and leveled concerns about being unable to sustain the results of the innovation project within

their own institutes after it had ended. The following quotation illustrates institution-to-project transfer:

"Traditionally they [i.e., student teachers] do their internships within PVSE and the first years of preparation for polytechnics. Through the innovation project, SSVE has received more attention within the teacher-training institute. So, student teachers are more likely to choose SSVE for their internships."

(Subject nr 3, SSVE teacher, Organizational learning outcomes – Combining inst/proj learning)

The main findings from the study are summarized in Table 5.1.

Conclusions and Discussion

The aim of this study was to contribute to further scientific knowledge about workplace learning by teaching staff within the scope of educational innovation projects, more specifically to investigate the individual and organizational learning outcomes of SOAP-inspired knowledge communities based on partnerships among educational institutes. From semi-structured interviews with 37 participants we can conclude that they valued the collaboration as well as the inter- and intra-institutional nature of the innovation project, which led to many instances of individual and organizational learning.

At the individual level, participants seem to have learned most about project design and management, about their own action theories with regard to education, and about the professional practice of teaching. At the organizational level, most learning seems to have occurred at the project level (among partners), although many instances were also reported of institute-level learning outcomes and in the interface between the project and the various separate institutions.

All participants, from different backgrounds (student teachers, teachers, and teacher educators) indicated having gained a broader view of the teaching profession and the difficulties associated with their different backgrounds. Especially the gradual enculturation of student teachers within professional teaching practice was valued by participants from all backgrounds. The shared responsibility for the innovation project in combination with the expertise of teachers and teacher educators seemed to provide the necessary precondition for their legitimate peripheral participation (Lave & Wenger, 1991).

Meirink (2007) also studied individual teacher learning in collaborative settings and found that many experienced teachers changed their beliefs if the learning was embedded in interdisciplinary teams over a longer period. She concluded that initiatives aiming for teacher development over a longer period of time, occurring in the context of a project were relatively successful in changing teachers' beliefs about education. Our findings are in line with these conclusions. We also see support from our analysis for Rowan's (1990; 1995) plea for a commitment strategy to educational reforms, as the SOAP approach used in the innovation project emphasized commitment from all those involved.

Van Woerkom (2003) identified a tension between, on the one hand, individual orientations and behavior, and on the other hand, organizational learning outcomes aimed at improving productivity. Where individuals may undertake certain activities in their own interest, those activities may be viewed by the organization as an instrument for change. The critical remarks made by participants about the (possible lack of) transfer between the innovation project and their schools in this study also revealed a tension between individual interest in learning and personal development, on the one hand, and organizational learning aimed at improving organizational processes, on the other hand. Participants in the study sometimes also reported individual learning outcomes that in their own estimation were outside the scope of the innovation project. By making such learning outcomes explicit and discussing them with the other partners, they can be evaluated by the

participants for an optional implementation process (expansive learning). Identifying and discussing these learning outcomes thus become preconditions for organizational learning. A focus for further research can be found in the management of this process. Overall, however, the SOAP approach did seem to offer teachers as well as educational institutions good opportunities for linking individual and organizational learning.

The evaluation aspect of innovation projects, and also of teaching in general, remains a difficult issue. Since evaluation can be fully addressed only after the implementation of the project, it is not often a key focus and therefore subject to omission. Even though evaluation was often mentioned as a motive for participating in the innovation project, it seems to have no priority in the minds of the participants. Similar to regular teaching practice, short-term goals (such as, keeping up teaching performance and finishing the project in time) seem to be more prominent than long-term goals (such as, improvement, evaluation, and organizational learning). The management of these innovation projects needs to clarify the crucial relevance of evaluation and emphasize recurrently the need for a thorough evaluation of the project.

In terms of limitations that need to be taken into account, determining all relevant learning outcomes was a challenge in this study, since learning can operate at several conscious and unconscious levels. By interviewing participants about their experiences, we gained access only to their conscious -- and possibly deliberate -- learning outcomes. We defined individual learning as an ongoing work-related process leading to changes in cognition, behavior, or both, including the aspect of becoming aware of one's implicit views and beliefs (Berings, 2006; Meirink, 2007). Although implicit learning tends to work at the unconscious level, we were able to identify individual learning outcomes related to participants' attitudes and action theories, amongst other more explicit outcomes. Therefore, an appropriate method seems to have been used for gaining insight in implicit learning processes as well,

although perhaps additional qualitative methods are desirable for exploring them more thoroughly in future studies.

All in all, creating cross-institutional knowledge communities based on the SOAP approach has been shown to involve educators in conceptualizing and designing competence-based vocational education and to create a number of promising opportunities for combining individual and organizational learning outcomes.

Chapter 6

Conclusions and General Discussion

The aim of the research reported in this dissertation was to examine the role of teachers in conceptualizing and designing competence-based prevocational secondary education (PVSE). In the introductory chapter we elaborated this aim into two research questions: *How do teachers in prevocational secondary education conceptualize and design competence-based education?*, and, *How do teachers acquire, within the context of their schools' policies, the competences needed to help pupils become competent?* In order to shed light on these questions four studies were conducted. These four studies focused on teachers' individual action theories, professional development activities of teaching staff, and individual and organizational learning outcomes were explored of an innovation project aimed at conceptualizing and designing competence-based vocational education. This concluding chapter first presents the main findings and conclusions of the empirical studies conducted, followed by a critical reflection on the empirical findings, on the theoretical approach, and on the methodology that were used. The limitations of the study and the implications for further research are discussed as well.

Conclusions with Regard to the Research Questions

Research Question 1: **How do teachers in prevocational secondary education conceptualize and design competence-based education?**
To answer this research question both the cognitive apprenticeship model (Collins et al., 1989) with its four dimensions (*content*, *teaching methods*, *sequence*, and *sociology*)

and the two metaphors for learning (*acquisition* versus *participation*) posed by Sfard (1998) were used as conceptual frameworks. Various qualitative techniques (e.g., concept maps, cued interviews, semi-structured interviews, feedback session) and a quantitative study were used in answering this research question.

The qualitative analysis revealed that the cognitive apprenticeship model proved to be a useful framework for interpreting the individual action theories of teachers participating in initiatives aimed at developing competence-based prevocational secondary education (chapters 2 and 3). The qualitative studies indicated that the elements *teaching methods* and *sociology* seemed more prominent in the individual action theories than *content* and *sequence* were. The quantitative study (in chapter 3) showed that teachers in prevocational secondary education valued all aspects (i.e., *content, teaching methods, sequence* and *sociology*) of the cognitive apprenticeship model when prompted with a questionnaire. Teachers seemed to hold complex belief systems of implicit and explicit norms and values, which were difficult to grasp either by qualitative or quantitative techniques. In addition to valuing the elements of the cognitive apprenticeship model, teachers revealed a desire for a more custom-made educational approach and further professionalization of teachers. Despite the data triangular nature of the studies, the analyses did not indicate any distinctive, crystallized action theories that emerged at the individual teacher level. As a result, the conclusion was drawn that these individual action theories might not be as established as was assumed from the theoretical framework used to support this empirical study.

Chapter 2 provided an insight in whether and how the acquisition metaphor (focusing on acquisition of knowledge) and participation metaphor (focusing on enculturation into a certain professional community) were present in teachers' individual action theories. It was concluded that these metaphors are present in the individual action theories of the majority of teachers investigated in the study. The acquisition and participation metaphors revealed themselves in three ways: (1) as opposing metaphors (with teachers either adopting exclusively the acquisition or

participation metaphor), (2) as a juxtaposition (with teachers portraying elements of both metaphors, but experiencing them as competing or problematic), and (3) as an integration (with teachers portraying a harmonious integration of both metaphors). These metaphors provide teachers with tools or vocabulary for discussing problems they experience in conceptualizing and designing competence-based prevocational secondary education. Identifying resistance, acknowledging the importance of the metaphors, and discussing the practical implications by the teachers involved in these innovative educational reforms seem to be preconditions for an effective implementation process.

Furthermore, it was concluded that the current prevocational secondary education system does not facilitate an integration of both metaphors, as very often practical/vocational subjects (e.g., technology) remain separated from general subjects (e.g., Dutch). If these types of subjects remain separated it is difficult for teachers as well as pupils to make meaningful relations between the subjects and the vocational context in which they need to be applied (see chapter 2). In order to make the current prevocational secondary education system more amenable to such integration, it is essential to look at the processes associated with organizational learning in schools, especially how organizational learning can be linked with individual learning.

Research Question 2: **How do teachers acquire, within the context of their schools' policies, the competences needed to help pupils become competent?**

To answer this research question two studies were conducted (see chapters 4 and 5). First, a comparative study was conducted of innovations towards competence-based education using semi-structured interviews with 30 PVSE teachers. The aim of this study was to gain more insight in the professional development activities that PVSE teachers undertake within the context of their schools' human resource policies (chapter 4). Second, a case study was conducted of a cross-institutional innovation project, using 37 semi-structured interviews with different types of educators (i.e.,

student teachers, PVSE teachers, SSVE teachers, and teacher educators), to gain insight in its learning outcomes at individual and organizational level. The innovation project was aimed at creating a cross-institutional knowledge community charged with conceptualizing and designing competence-based prevocational secondary education for pupils (chapter 5).

From the analysis of the qualitative data in the first study (chapter 4), it was concluded that not all teachers were consciously pursuing professional development. All teachers however, were involved in undertaking various different professional development activities. The categories (i.e., *reading, experimenting, reflecting* and *collaboration*) used by Kwakman (1999, 2003a) proved to be a useful framework for analyzing the semi-structured interviews, although two categories needed to be expanded (*reading* was broadened to *maintaining knowledge base* and *experimenting* was broadened to *applying and experimenting*) and a fifth category was added (*activities indirectly related to teaching practice*). Teachers undertook most professional development activities in the category *collaboration* (n = 130); this was also the most diverse category, containing ten different activities reported. The category that followed in prevalence were *maintaining knowledge base* (n = 108), containing six different activities reported, and *applying and experimenting* (n = 97), containing five different activities reported. Then *reflecting* (n = 63) followed in prevalence, containing six different activities reported, and finally the least frequent mentioned, *activities indirectly related to teaching practice* (n = 46), containing 4 different reported activities.

In order to answer research question 2, the first study (chapter 4) also analyzed the expressions made by teachers regarding the role of the schools' human resource (HR) policies. This study compared two newly introduced HR policies: the compulsory implementation of integral personnel management (or IPM) and a voluntary introduction of a SOAP-based HR policy (for a more elaborate background on SOAP see chapters 1 and 5). Only the level of familiarity with the compulsory HR policy of IPM seemed to have an impact on the professional development category

maintaining knowledge base. In this category, teachers who were familiar with IPM but did not experience an integral approach reported undertaking significantly more professional development activities than did teachers who were familiar with IPM and did experience an integral approach. Other than this, not many differences were found in teachers' professional development activities depending on their schools' HR policy (SOAP versus non-SOAP).

Neither a government-induced HR policy (IPM) nor a voluntary HR policy (SOAP) by it self, seemed to be sufficiently implemented yet to become visible and meaningful to teachers. Teachers' perceptions of their schools' HR policies (e.g., the integration of SOAP elements) seemed to differ from the HR policies intended by the schools. The responsibility for a transparent HR policy lies with the school management. This study showed that few teachers are involved in implementing (aspects of) HR policies, thus accounting for a gap between the schools' HR policies and daily teaching practice.

To answer the second research question, the second study (chapter 5) focused on how participants perceived a SOAP-inspired cross-institutional innovation project as an effective approach for combining individual learning with organizational learning. Participants valued the collaboration with participants of different backgrounds (i.e., student teachers, PVSE teachers, SSVE teachers, and teacher educators) and the cross-institutional nature of the project. Furthermore, the presence and outcomes of individual learning and organizational learning in SOAP-based cross-institutional innovation projects were studied. Seven individual learning outcomes were defined: *attitudes*, *project design and management*, *collaboration*, *action theory*, *teaching practice*, *educational principles*, and finally, *developments in secondary vocational education*. Three different main categories were defined for organizational learning: *institution-level learning*, *project-level learning*, and *combining institution-level and project-level learning*. All educators involved (i.e., student teachers, teachers, and teacher educators) expressed having gained a broader view of the teaching profession and the difficulties experienced by educators having other backgrounds.

Especially the gradual enculturation of student teachers in the professional teaching practice was valued by all educators.

Embedding evaluation- or (action-) research-based activities remained a difficult issue within this innovation project. Even though evaluation aspects were often expressed by educators as a motivation for participating in the innovation project, they did not seem to have any priority. Similar to regular teaching practice, short-term goals (e.g., keeping up teaching performance and finishing the preparation of the project in time) seemed to have more priority than long-term goals (e.g., improvement, evaluation, and organizational learning). Another conclusion of this study was that some reported learning outcomes were not always aimed for by the innovation project. This study thus revealed a tension between the individual's desire for learning (i.e., continuing professional development) and the desired organizational learning (aimed at improving organizational processes).

Overall Conclusions and Discussion

The findings of the four studies reported in this dissertation indicate the complex and interdisciplinary nature of continuing professional development of PVSE teachers involved in educational reforms. The studies reported in this dissertation looked at continuing professional development of teachers involved in designing competence-based vocational education by involving them in knowledge communities based on the SOAP approach. Van der Sanden (2004) proposed a framework that attempts to align initial **S**chooling of teachers, **O**rganizational development of (secondary) schools, **A**ction- and development-oriented research and continuing **P**rofessional development of teachers (an approach also known as SOAP; see also Seezink & Van der Sanden, 2005). The SOAP approach seems to embody some powerful elements for facilitating and integrating individual and organizational learning which are elaborated below.

Possibilities Offered by the SOAP Approach

First, giving teachers the responsibility for conceptualizing and designing competence-based prevocational secondary education encourages them to take ownership of their own continuing professional development. Teachers involved in these tasks need to collaborate with colleagues from different subjects, backgrounds, and perspectives on the quality of education, encountering various complexities and difficulties. In order to overcome these complexities and difficulties, teachers may become aware that they need to acquire additional competences and, therefore, need to pursue continuing professional development. The strong connection with their teaching practice and the embedding of continuing professional development within their own workplace require teachers to apply knowledge gathered into their design and development activities for educational programs, thus promoting the transfer of learning outcomes.

Second, the SOAP approach promotes the formation of cross-institutional knowledge communities. These communities can facilitate and support school development. Participating in knowledge communities provides a natural setting without any thresholds for work-related learning activities to occur, such as, self-directed learning, collaborative learning, and peer coaching. In addition, since the teachers participating in the knowledge community are assigned the task of conceptualizing and designing educational programs, this participation focuses on producing long-term usable educational materials. The SOAP case study (chapter 5) provided a good insight in the learning outcomes, on both the individual and organizational levels. Another strong element in the formation of knowledge communities based on the SOAP approach is that their cross-institutional nature provides the participants with multiple perspectives on vocational education and guarantees an alliance of educational institutes. By joining this alliance, the participants gain insight in the question of how other (sometimes competing) schools or educational institutions handle difficulties. As a result, the participants gain a

broader view of the required competences, associated problems, and challenges for pupils in continuing their school careers. The diversity in participants' backgrounds (student teachers, PVSE teachers, SSVE teachers, and teacher educators) was valued strongly across all participants (chapter 5). Concluding, it can be put forward that cross-institutional knowledge communities based on the SOAP approach can provide an effective setting for embedding teachers' continuing professional development within their workplaces and that this participation also contribute to the school development.

Third, assigning teachers to become involved in developing new educational programs inherently makes them part of their schools' organizational development. As managing and maintaining teacher quality is a shared responsibility of the individual and the organization, closing the gap between school management and teaching practice becomes increasingly important. A more transparent HR policy makes professional development opportunities more accessible, lowering the threshold for teachers who want to invest in their professional development. Also, it creates possibilities for alternative – possibly more meaningful and relevant – professional development activities, if teaching staff become more aware of the preconditions and steps they need to take in order to find approval by school management. The qualitative data analysis (in chapter 5) indicated a tension between the individual's desire for continuing professional development and the organizational learning aimed at improving organizational processes. To gain more insight in the processes associated with aligning development of individuals and organizations, the educational sector may draw on the body of knowledge available within human resource management and adult learning.

Within human resource management, starting points can be found in the body of knowledge used within the strategic HRM framework. Strategic HRM concentrates on how to influence behavior of individuals in a way that is in alignment with the strategic aims of the organization (Nishii & Wright, 2008). Here it is possible to explore best practices of integral personnel management in businesses.

Recently, the health sector has gained more interest (e.g., Boon, 2008), and since the educational sector has some similarities with the health sector (in terms of the nature of quantifiable outcomes), it might be useful to explore this as a starting point.

Also, the body of knowledge within adult learning could provide some interesting starting points, since continuing professional development implies adult learning by definition. Adult learning highlights the complex nature of a learning adult (Knowles, 1973), emphasizing their critical attitudes for learning, their already developed learning styles, and their continuous focus on relevance and functionality of learning content within their own context. Adult learning forms an important aspect of human resource development; however the concepts used within this field have not yet been embraced by the educational sector.

Possible Drawbacks of the SOAP Approach

Besides these advantages, the SOAP approach may also have some drawbacks that need further attention. First, the underlying assumption in undertaking this cross-institutional innovation project was that by including several educators from various institutions, this initiative would generate a snowball effect. However, in the case study (chapter 5) it was found that the learning outcomes that were related to transfer (between institutions and project) also entailed some difficulties. Teachers sometimes experienced resistance within their own institutions, both at the teacher level and at the management level, in terms of finding support for participation and in terms of the internal communication about the results from this innovation project. Often school management focused on formalized ways of professional development (i.e., courses, attending workshops, or similar events), whereas teachers preferred to learn in the workplace by interacting with the SOAP partners in the innovation project, which held direct relevance to their own work. Formal training does not seem overly effective and tends to impede the transfer of learning from course settings to workplace settings (Knight, 2002; Poell, 1998).

Second, the action and development-oriented research component within the SOAP-approach received relatively little attention in the projects. Within the SOAP case study (chapter 5), teachers expressed critical remarks about the (lack of) innovative nature and the (lack of) sustainability of the project within their own institutes. Evaluation or research-oriented processes within education serve a long-term purpose for organizational development and are, therefore, an essential part of the innovation cycle. The short-term day-to-day demands of teaching often overshadow those long-term reflection processes, both at the level of teaching practice and at the level of organizational development.

Third, organizing these kinds of cross-institutional innovation projects is a complex and labor-intensive task. Until now, these initiatives were (partially) subsidized by the Dutch government as an experiment to facilitate the development towards competence-based vocational education. With this financial aid coming to a halt, the question arises how to initiate and sustain similar cross-institutional innovation projects in the future.

In order to gain insight into the way teachers conceptualize and design competence-based prevocational education and how they acquire the competences to help pupils become competent an investigation was made of their individual action theories, their professional development activities, and the learning outcomes of knowledge communities based on the SOAP approach. Summarizing this critical reflection on the empirical findings, it may be concluded that although there are some potential drawbacks, the SOAP approach holds some powerful elements for linking individual learning with organizational learning.

Reflection on the Theoretical Concepts

To continue our critical reflection on the studies reported in this dissertation, the main theoretical concepts used will be evaluated in this section. The research started

in prevocational secondary education, about which context little conceptual and empirical knowledge was available (Van den Berg & De Bruijn, 2009). One concern, therefore, was whether and to what extent the concepts used for research within higher vocational education and university settings were applicable. As for the cognitive apprenticeship model (Collins et al., 1989; see chapters 2 and 3) and the professional development framework (Kwakman, 1999; see chapter 4) it can be concluded that these are useful frameworks for the vocational education context, although they sometimes seemed somewhat rigid. For the presented studies, it was necessary to broaden and elaborate on the concepts used within these frameworks in order to fit them into the practice-oriented setting of prevocational education.

Furthermore, we used the concept of individual action theories for describing and analyzing the complex whole of practice-based knowledge and personal beliefs of teachers, which forms the foundation for their instructional actions. Here it can be concluded that within the present study (and in accordance with Van der Krogt, 2007), teachers' individual action theories may not have a distinctive and crystallized form. Possibly, however, they can also be seen as a more flexible and general framework, capable of adapting to environmental factors (chapter 2).

Finally, the concept of knowledge communities (based on the SOAP approach) was used for bringing together individual and organizational learning. The concept of knowledge communities refers to the ongoing interaction of a certain group of individuals within an organization, who share a concern, set of problems, or a passion about a topic and who want to deepen and elaborate their knowledge (Wenger, Mcdermott, & Snyder, 2002). In this definition it is a very generic and non-specific concept; the present studies used this freedom to apply the principles within the SOAP approach. Subsequently, this framework was used for looking at learning outcomes at the individual and organizational level. This led to exploration of the body of literature on individual teacher learning and organizational learning in schools. It was concluded that little empirical research was available on learning outcomes of knowledge communities (see Mittendorff et al., 2006, for an exception).

As a result, the focus changed to learning outcomes of participating within a cross-institutional innovation project (chapter 5). The concepts of individual versus organizational learning outcomes proved useful as starting points for our qualitative data analysis.

This section has presented a critical reflection on the theoretical approach underlying this dissertation. In order to deepen understanding, concepts were drawn from different disciplines and areas of literature in the presented studies (e.g., educational sciences, HRM, HRD, educational psychology, and so forth). This provided alternative explanations and new questions to answer; however, it was sometimes difficult to integrate the different vocabularies used within each domain of expertise. In conclusion, it can be argued that further integration of these disciplines is necessary for gaining a good understanding of the processes of continuing professional development among teachers, especially in prevocational secondary education.

Reflection on the Methodology

In this section we reflect on the methods employed in the studies. First, the limitations associated with descriptive and explorative research will be discussed, and second, the limitations associated with the type of data used in the studies will be dealt with.

The descriptive and explorative nature of the studies limits the statistical generalizability of the findings. Generalizability is defined as the extrapolation of the findings to other contexts with different characteristics, making it possible to formulate predictions about recurring practice (Shaughnessy et al., 2000). In order to compare contexts however, a first step is to identify and research the characteristics of a particular context and subsequently study the characteristics of the context of interest. The context of competence-based vocational education in the Netherlands,

however, has gained academic and political interest only since the start of this millennium (Van den Berg & De Bruijn, 2009). As a result, research can only focus on gaining a fundamental view and exploring the opportunities and boundaries of competence-based vocational education, and, therefore, theoretical generalization becomes more important than statistical generalization. This dissertation has purposefully focused on gaining rich and deep data from various educators in vocational contexts, in their role of 'boundary crossers', who form a critical link in implementing an educational reform such as competence-based vocational education. In two chapters (3 and 4) however, we did pay attention to expanding the statistical generalizability with respect to different populations, by validating the qualitative results in a quantitative study (chapter 3) and by comparing teachers from schools with different HR policies (SOAP versus non-SOAP; chapter 4).

The second aspect of the present study that limits the scope of its conclusions is the type of data used in the studies. A range of qualitative methods was used and also a quantitative study focused on teachers' perceptions. By combining qualitative and quantitative data an attempt was made to gain rich and meaningful data and at the same time to avoid the pitfalls associated with each methodology. All methods used in the dissertation, however, had teachers verbalize their learning experiences and some teachers expressed that they found it difficult to make their learning outcomes explicit. The verbal nature of the methods also emphasized the conscious – and possibly deliberate – aspects of professional development. Furthermore, these methodologies did not contain any objective measures of the degree of socially desirable responses. The researchers involved in data collection were, however, genuinely interested in the experiences, beliefs, and opinions of the participating teachers, stressing that there were simply no 'good' or 'bad' answers. They emphasized that confidentiality and anonymity were guaranteed and that participating in this study would have no (possibly negative) implications to them.

Implications for Future Research and Practice

This dissertation has focused on the continuing professional development of teachers in competence-based prevocational secondary education. In order to research this, a focus has been placed on gaining insight in teachers' individual action theories, their professional development activities undertaken in the context of their schools' HR policies, and the various learning outcomes of a SOAP-inspired innovation project. Based on the descriptive and explorative research presented in this dissertation a number of implications can be formulated for further research. This section discusses these implications and offers suggestions for further research. Also, a number of practical implications will be addressed.

Within the area of teachers' conceptualizations about competence-based prevocational education, this dissertation adds to the discussion about the level of establishment of individual action theories. This raises the question: How stable (or flexible) are individual action theories of teachers in the context of educational reform and how exactly do they influence instructional behavior of teachers? The empirical evidence for the existence of stable individual action theories that influence instructional behavior seems to point in different directions, leading to conceptual and empirical debate. Gaining a fundamental insight in this explicit link can help us understand which elements underlie instructional behavior and how way this can be influenced. This can lead to directive instructions for designing powerful curricula for teacher training institutes as well as continuing professional development programs.

Another promising area for further research concerns the link between teachers' professional development activities and their schools' HR policies, especially taking into account the differences among intended, actual, and perceived HR policies. A research question could be: Under which conditions can the alignment between teachers' individual development preferences and their schools'

HR policies be optimized? As secondary schools in the Netherlands are gaining more autonomy in terms of governance, an appeal is made on the teachers employed to act as professionals who bear responsibility and account for their professional actions. This autonomy is necessary to introduce and employ innovative educational reforms. Secondary schools have considerably increased in size over the past few years, and the bureaucracy has grown accordingly. Although personnel management has been initiated only recently, the process of implementing new HR policies seems to evoke some resistance to change. For further research, therefore, it might be useful to draw on the human resource management (HRM) literature, in an attempt to learn from the body of knowledge used within a strategic human resource management framework. Strategic human resource management focuses on achieving organizational goals by planned HR activities, which are designed to influence behavior of individuals in a way that incorporates the strategic needs of the organization (Nishii & Wright, 2008).

Grieves and Hanafin (2005) point out that in the United Kingdom, HR policies within schools seem to be undervalued and left to untrained personnel. They argue the need for HR professionals to avoid ambiguity and pragmatic decisions by line managers and to secure employee commitment by enabling them to influence the management style and organizational culture. Similar to the United Kingdom, the Dutch educational system reveals a clear separation between school management and teaching practice (Van Driel, 2006). It would be useful to investigate how schools that employ dedicated HR professionals differ from other schools in terms of their HR and development policies (e.g., the extent of implementation of integral personnel management and the relationship to continuing teacher development)?

Another question that arises is: What expectations do teachers have of continuing professional development programs and what support do they require from the school for undertaking these programs? Gaining insight in the expectations of teachers can reveal facilitating factors and boundary conditions in their preferences for undertaking continuing professional development programs. By

aligning these preferences with the support offered by schools, alternative ways of professional development may be explored that are beneficial at individual and at the organizational level. As illustrated earlier, these questions require an integration of several major academic fields, such as psychology, educational sciences, HRD, and human resource management. Taking an interdisciplinary approach to these questions may result in a new area of expertise with greater empirical and conceptual significance.

Finally, some practical implications will be discussed. The first practical implication is that schools, being educational institutions, have the responsibility to provide their teachers with opportunities for continuing professional development. The teachers involved in the present study, however, were often not aware of the possibilities for continuing professional development within their schools. We would argue, therefore, that providing a more transparent HR policy can facilitate individual development initiatives, for example by lowering the threshold for professional development activities to occur.

Another practical implication is derived from the fact that teachers' perceptions of their schools' HR policies seemed to differ from the HR policies intended by the schools, resulting in a separation between teaching staff and the schools' management. In order to promote mutual understanding and create more transparency, we would emphasize the importance of involving teachers in HR practices.

The final practical implication of this dissertation is an attempt to encourage educational institutes to explore other, alternative initiatives for professional development besides the formal continuing professional development activities (e.g., courses, workshops, seminars) that are often used. A joint quest by teachers and school management to explore these opportunities may result in better aligning individual and organizational learning goals. In addition, empowering teachers for professional development reduces the chances that they perceive their work merely as the execution of routine tasks. It allows teachers to view themselves as

autonomous professionals, who are accountable and responsible for their professional actions.

Samenvatting (Summary in Dutch)

Professionalisering van docenten voor competentiegericht onderwijs: De rol van docenten in competentiegericht vmbo

Economische, politieke en maatschappelijke ontwikkelingen hebben gezorgd voor grote veranderingen binnen het Nederlandse beroepsonderwijs. Niet alleen binnen Nederland, maar ook binnen Europa is er in de afgelopen jaren steeds meer aandacht gekomen voor competentiegericht opleiden (Weigel, Mulder, & Collins, 2007). De omslag naar competentiegericht beroepsonderwijs heeft grote consequenties voor de school als organisatie en ook voor de betrokken docenten. Docenten zijn een cruciaal onderdeel van de leeromgeving binnen het beroepsonderwijs. De kwaliteit van het onderwijs hangt voor een groot gedeelte af van de kwaliteit van de docenten. In het kader van competentiegericht opleiden wordt van docenten verwacht dat zij hun leerlingen ondersteunen in het integreren van kennis, vaardigheden en attituden tot persoonlijke competenties (Onstenk, 1997, 2001). Het ondersteunen van verdere professionele ontwikkeling van docenten is hierbij noodzakelijk, aangezien de docenten die momenteel werkzaam zijn in het beroepsonderwijs noch zijn opgeleid voor het vervullen van deze nieuwe rollen, noch zelf competentiegericht onderwijs ervaren hebben. Om de invoering van competentiegericht onderwijs te kunnen ondersteunen is het belangrijk niet uitsluitend te kijken naar gedrag van docenten, maar ook een verandering teweeg te brengen in hun praktijktheorieën.

Het faciliteren van de professionele ontwikkeling van docenten krijgt steeds meer aandacht op het niveau van de overheid alsook op het niveau van schoolmanagement. De verantwoordelijkheid voor de kwaliteit van docenten ligt zowel bij het individu als bij de organisatie. Daarom zijn veel scholen op zoek naar een inbedding van professionele ontwikkeling in de context van schoolontwikkeling.

127

Een hedendaagse ontwikkeling binnen scholen is het creëren van leer/werkgemeenschappen, waarmee zij docenten proberen te betrekken bij het uitdenken en ontwikkelen van competentiegericht beroepsonderwijs. Om in dit kader individueel leren met organisatieleren (op collectief niveau) te verbinden benadrukt Van der Sanden (2004) een integrale benadering van Schoolontwikkeling, Opleiden van leraren, Onderwijskundig onderzoek en Professionalisering van docenten (SOOP). Het doel van deze op SOOP gebaseerde leer/werk-gemeenschappen is het ontwikkelen en ontwerpen van competentiegerichte leeromgevingen voor leerlingen.

Doelstelling, opzet en onderzoeksvragen

In deze dissertatie staat professionalisering van docenten centraal in het kader van de invoering van competentiegericht onderwijs. In het bijzonder wordt aandacht besteed aan de rol van docenten in competentiegericht voorbereidend middelbaar beroepsonderwijs (vmbo). Deze dissertatie heeft als doel bij te dragen aan de wetenschappelijke kennisbasis omtrent docentprofessionalisering, meer specifiek door empirisch onderzoek dat sterk is ingebed in de huidige innovaties binnen het vmbo. De verschillende studies in deze dissertatie richten zich op twee onderzoeksvragen:

1) Hoe conceptualiseren en ontwerpen docenten competentiegerichte leeromgevingen in het vmbo?
2) Hoe verwerven docenten zelf, binnen de context van hun eigen schoolbeleid, de competenties die nodig zijn om competentieontwikkeling bij leerlingen te bevorderen?

Hoofdstuk 2 presenteert een onderzoek dat is opgezet vanuit een SOOP-perspectief: een integrale benadering van Schoolontwikkeling, Opleiden van leraren, Onderwijskundig onderzoek en Professionalisering van docenten. Het onderzoek is uitgevoerd bij docenten van verschillende (vakmatige) achtergronden, die

samenwerken in een leer/werkgemeenschap. Deze leer/werkgemeenschap heeft als primair doel het ontwerpen en ontwikkelen van loopbaangerichte projecten, lesmaterialen en didactische werkvormen voor leerlingen in het kader van het vormgeven van competentiegericht vmbo. Onderzocht is in hoeverre concepten en principes van het Cognitive Apprenticeship Model (Collins, Brown, & Newman, 1989) naar voren komen in praktijktheorieën van de docenten die participeren in de leer/werkgemeenschap. Docenten bleken vooral in te gaan op didactische maatregelen en de sociologie van het leren. Uitspraken over leerinhouden en opbouw van het programma kwamen in mindere mate naar voren. Daarnaast hebben we geïnventariseerd in hoeverre zich in hun praktijktheorieën een spanning manifesteert tussen de door Sfard (1998) onderscheiden acquisitie- en participatieperspectieven. Ook al waardeerden docenten de participatie van leerlingen binnen een professionele gemeenschap, ze vreesden tegelijkertijd dat het acquisitieperspectief ondergewaardeerd raakte.

In **hoofdstuk 3** wordt een onderzoek gepresenteerd dat ingaat op de waarde van het Cognitive Apprenticeship Model voor het ontwerpen van competentiegericht vmbo. Het onderzoek richt zich op twee onderzoeksvragen: 1) Hoe waarderen docenten de elementen van het Cognitive Apprenticeship Model in het ontwerpen en invullen van competentiegericht vmbo?, en, 2) Wat zijn de praktijktheorieën over competentiegericht onderwijs van docenten werkzaam in het vmbo? Dit onderzoek is ontworpen en uitgevoerd in twee deelstudies: een kwalitatieve deelstudie en een kwantitatieve deelstudie. In de kwalitatieve deelstudie zijn interviews en concept mapping techniques gebruikt; de kwantitatieve deelstudie bestond uit een vragenlijstonderzoek. In de kwalitatieve deelstudie kwam naar voren dat de elementen *didactische maatregelen* en *sociologie* in de praktijktheorieën van docenten meer prominent aanwezig zijn dan *leerinhouden* en *opbouw van het programma*. Verder gaven docenten in het kwalitatieve deel aan meer aandacht te willen voor *maatwerk* om leerlingen beter te kunnen ondersteunen, alsook voor ondersteuning bij hun

professionele ontwikkeling als docenten. Een kwantitatieve studie werd ondernomen om te onderzoeken of deze aspecten ook gewaardeerd werden door een grotere groep docenten in het vmbo. De vragenlijst bestond uit zes conceptuele schalen: *leerinhouden, didactische maatregelen, opbouw van het programma, sociologie, maatwerk*, en *professionele ontwikkeling van docenten*. De items werden docenten voorgelegd op drie niveaus, namelijk: hoe <u>belangrijk</u> vind je deze maatregel?, hoe <u>toepasbaar</u> vind je deze maatregel binnen competentiegericht VMBO?, en, in hoeverre is deze maatregel <u>reeds toegepast</u> binnen jouw eigen schoolomgeving? De kwantitatieve data-analyse liet zien dat docenten alle vier aspecten van het cognitive apprenticeship model belangrijk vonden. Meer specifiek lieten de resultaten zien dat docenten *opbouw van het programma* significant belangrijker vonden dan *sociologie en maatwerk*. Ook *didactische maatregelen* werd significant belangrijker ervaren dan *maatwerk*. Docenten ervaarden *opbouw van het programma* en *didactische maatregelen* als significant beter toepasbaar dan *sociologie* en *maatwerk*. In de perceptie van docenten werden maatregelen aangaande *opbouw van het programma, didactische maatregelen*, en *professionele ontwikkeling van docenten* significant meer toegepast in de eigen schoolomgeving dan *sociologie, leerinhouden*, en *maatwerk*.

Aangezien de omslag naar competentiegericht onderzoek gevolgen heeft voor docenten en schoolmanagement, worden in **hoofdstuk 4** de professionaliserings-activiteiten van docenten binnen de context van het personeelsbeleid van hun scholen onderzocht. Twee ontwikkelingen binnen het personeelsbeleid van scholen zijn onderzocht: als eerste de van overheidswege verplichte implementatie van Integraal Personeelsbeleid (IPB) en, als tweede, de vrijwillige deelname aan een innovatieproject gericht op de integrale benadering van Schoolontwikkeling, Opleiden van leraren, Onderwijskundig onderzoek en Professionalisering van docenten (SOOP). Zowel IPB als SOOP hebben als doel de professionalisering van docenten te beïnvloeden. Het doel van het onderzoek is zicht te krijgen op de professionaliseringsactiviteiten die docenten in het vmbo ondernemen en of deze

verschillen tussen scholen met uiteenlopend personeelsbeleid. Drie onderzoeksvragen stonden centraal: 1) Welke professionaliseringsactiviteiten ondernemen docenten in vmbo? 2) In welke mate herkennen vmbo-docenten elementen van IPB en SOOP in het personeelsbeleid van hun school? 3) Zijn er verschillen in de professionaliseringsactiviteiten van docenten tussen scholen met uiteenlopend personeelsbeleid? Semigestructureerde interviews met docenten op negen scholen met uiteenlopend personeelsbeleid zijn kwalitatief en kwantitatief geanalyseerd. Docenten in het vmbo bleken activiteiten te ondernemen in vijf categorieën: *onderhouden van eigen kennisbasis, toepassen en experimenteren, reflectie, samenwerking*, en, *activiteiten indirect gerelateerd aan onderwijs*. De professionaliseringsactiviteiten van docenten verschilden marginaal tussen scholen met uiteenlopend personeelsbeleid. Het personeelsbeleid van hun school was niet altijd bekend bij de docenten en slechts enkelen waren persoonlijk betrokken bij de implementatie van personeelsbeleid.

In **hoofdstuk 5** is aan de hand van een gevalsstudie van een inter-institutioneel innovatieproject, opgezet vanuit een integrale benadering van Schoolontwikkeling, Opleiden van leraren, Onderwijskundig onderzoek en Professionalisering van docenten (SOOP), onderzocht welke leeropbrengsten geïdentificeerd konden worden op individueel en organisatieniveau. Het innovatieproject had als doel dat docenten, docenten-in-opleiding en lerarenopleiders gezamenlijk nieuwe competentiegerichte onderwijsarrangementen voor leerlingen in het vmbo zouden conceptualiseren en ontwikkelen. De volgende onderzoeksvraag stond centraal: Welke leeropbrengsten van een innovatieproject gebaseerd op het SOOP-perspectief zijn te identificeren op individueel en organisatieniveau? Een inductieve data-analyse van 37 semi-gestructureerde interviews met de verschillende deelnemers resulteerde in zeven hoofdcategorieën van individuele leeropbrengsten: op het vlak van attitudes, projectontwikkeling en -management, samenwerking, praktijktheorieën, onderwijspraktijk, onderwijskundige principes, en ontwikkelingen in het

beroepsonderwijs. Drie hoofdcategorieën werden geïdentificeerd van leeropbrengsten op organisatieniveau: op het vlak van instituutsleren, projectleren, en de interactie tussen instituuts- en projectleren. Een spanningsveld werd geconstateerd tussen de individuele interesse in professionalisering van de deelnemers en de noodzaak tot organisatieleren gericht op het verbeteren van organisatorische processen. Ondanks het feit dat lange-termijn doelen zoals evaluatie en onderzoek vaak voorkwamen als individuele motivaties om te participeren, werd het bereiken van deze doelen gehinderd door een korte-termijn focus op het ontwikkelen van nieuwe onderwijsmaterialen.

Ten slotte zijn in **hoofdstuk 6** de conclusies en de algemene discussie weergegeven, gebaseerd op de verschillende studies opgenomen in dit proefschrift. Er worden conclusies geformuleerd aan de hand van de in hoofdstuk 1 gepresenteerde onderzoeksvragen: 1) Hoe conceptualiseren en ontwerpen docenten competentie-gerichte leeromgevingen in het vmbo?, 2) Hoe verwerven docenten zelf, binnen de context van hun eigen schoolbeleid, de competenties die nodig zijn om competentieontwikkeling bij leerlingen te bevorderen?

Om bovenstaande eerste onderzoeksvraag te kunnen beantwoorden zijn twee studies ondernomen (zie hoofdstuk 2 en 3). Als uitgangspunt zijn de denkkaders van het Cognitive Apprenticeship Model (Collins, et al., 1989) met zijn vier dimensies (*leerinhoud, didactische maatregelen, opbouw van het programma en sociologie*) en de beide metaforen van Sfard (1998) (*acquisitie* versus *participatie*) gebruikt. De kwalitatieve data-analyse gaf aan dat elementen als *didactische maatregelen* en *sociologie* prominenter aanwezig waren in hun praktijktheorieën dan *leerinhouden* en *opbouw van het programma.* Alle vier aspecten van het cognitive apprenticeship model werden door docenten belangrijk gevonden. Docenten blijken een complex geheel van impliciete en expliciete normen en waarden te hanteren die moeilijk te duiden zijn, zowel met kwalitatieve als kwantitatieve technieken. Ondanks de pogingen om een

triangulair perspectief te creëren, konden in de analyses derhalve geen duidelijke, uitgekristalliseerde praktijktheorieën vastgesteld worden op individueel niveau.

Uitgaande van de acquisitie- en participatiemetaforen was het mogelijk drie varianten vast te stellen: ze opvatten 1) als tegenovergestelde metaforen (waarbij docenten exclusief elementen vertoonden van de acquisitie- dan wel participatiemetafoor), 2) als een problematische samenstelling (waarbij docenten elementen vertoonden van beide metaforen en deze als incongruent ervaarden) en 3) als een integratie (waarbij docenten een harmonieuze integratie lieten zien van beide metaforen). Verder werd geconcludeerd dat het huidige vmbo-systeem een integratie van beide metaforen niet faciliteert, omdat praktische of beroepsgerichte vakken (zoals bijv. technologie) vaak gescheiden blijven van de algemeen vormende vakken (zoals bijv. Nederlands). Zolang deze verschillende vakken binnen het beroepsonderwijs gescheiden blijven is het moeilijk voor zowel docenten als leerlingen om betekenisvolle relaties tussen de verschillende vakken te leggen.

Om de tweede onderzoeksvraag van deze dissertatie te beantwoorden, namelijk "Hoe verwerven docenten zelf, binnen de context van hun eigen schoolbeleid, de competenties die nodig zijn om competentieontwikkeling bij leerlingen te bevorderen?", zijn twee studies uitgevoerd (zie hoofdstuk 4 en 5). De eerste studie (hoofdstuk 4) was bedoeld om zicht te krijgen op de professionaliseringsactiviteiten die docenten ondernemen in het kader van het personeelbeleid van hun school. Hoewel niet alle docenten bewust bezig waren met hun professionele ontwikkeling, ondernamen ze wel allemaal professionaliseringsactiviteiten binnen de vastgestelde vijf categorieën. Deze studie onderzocht ook of uiteenlopend personeelsbeleid (SOOP en IPB) invloed had op de ondernomen professionaliseringsactiviteiten. Er werden marginale verschillen gevonden in professionaliseringsactiviteiten afhankelijk van het personeelsbeleid.

Vervolgens is er een gevalsstudie van een inter-institutioneel innovatieproject ondernomen (hoofdstuk 5), om inzicht te krijgen in de leeropbrengsten daarvan op

individueel en organisatieniveau. Zeven soorten leeropbrengst op individueel niveau werden geïdentificeerd naast drie soorten leeropbrengst op organisatieniveau.

In de algemene discussie worden de mogelijkheden die het SOOP-perspectief biedt besproken, gevolgd door een aantal beperkingen. Door docenten verantwoordelijk te maken voor (een deel van) het competentiegerichte programma worden ze ook aangemoedigd om kritisch te kijken naar hun eigen professionele ontwikkeling. Ook bevordert de SOOP-aanpak samenwerking tussen lokale onderwijsinstituten in het ontwikkelen van lange-termijn onderwijsmaterialen, waardoor een natuurlijke setting gecreëerd wordt voor het ontplooien van professionaliseringsactiviteiten. Daarnaast biedt SOOP de deelnemers ook verschillende perspectieven op het beroepsonderwijs en de gevoeligheden die op elk niveau spelen. Door docenten een rol te laten spelen in het ontwikkelen van nieuwe onderwijsprogramma's worden ze onderdeel van de organisatieontwikkeling binnen hun school. Door een transparant personeelsbeleid te hanteren met een lage drempel voor het investeren in hun professionele ontwikkeling, kan de school kansen creëren voor alternatieve – en mogelijk meer betekenisvolle – professionaliseringsactiviteiten. In hoofdstuk 5 blijkt echter dat er een spanningsveld optreedt tussen de individuele interesse in professionalisering van de deelnemers en de noodzaak tot organisatieleren gericht op het verbeteren van organisatorische processen.

Beperkingen van het SOOP-perspectief bestaan onder andere uit het feit dat aangenomen is dat door verschillende onderwijsinstituten te betrekken een sneeuwbaleffect zou ontstaan. In onze gevalsstudie is gebleken dat deze gewenste transfer op een aantal moeilijkheden is gestoten. Ook het evaluatie- en onderzoeksaspect binnen SOOP krijgen relatief weinig aandacht, waardoor de deelnemers kritisch zijn over de duurzaamheid van het project en (het gebrek aan) innovativiteit. Als laatste zijn deze inter-institutionele projecten een arbeidsintensieve en kostbare aangelegenheid, waardoor ook hier de vraag overheerst naar de duurzaamheid van dit soort projecten.

Als laatste worden in hoofdstuk 6 een aantal implicaties voor onderzoek en praktijk gegeven. Deze dissertatie voegt nieuw empirisch bewijs toe aan de discussie in hoeverre praktijktheorieën van docenten duidelijke, uitgekristalliseerde entiteiten zijn. Inzicht krijgen in de fundamentele processen die hieraan bijdragen kan ons helpen beter te begrijpen welke elementen ten grondslag liggen aan didactische activiteiten en hoe die kunnen worden beïnvloed. Een andere interessante invalshoek voor toekomstig onderzoek ligt in het bedoelde, feitelijke en ervaren personeels-beleid van scholen. Middelbare scholen in Nederland krijgen steeds meer autonomie van de overheid, waardoor docenten steeds meer worden gezien als professionals die verantwoordelijk zijn voor hun professionele handelen. Hier kan de kennisbasis binnen de human resource management (HRM) literatuur goede aanknopingspunten bieden. Ook inzicht verwerven in de verwachtingen van docenten en de (mate van) steun die zij willen ontvangen van hun school is in dit opzicht belangrijk.

Tot slot worden enkele praktische implicaties van het onderzoek bediscussieerd. Scholen zijn verantwoordelijk voor de professionele ontwikkeling van hun onderwijzend personeel. Vaak zijn zij echter niet op de hoogte van de mogelijkheden voor professionalisering. Een praktische implicatie is dan ook het personeelsbeleid zo transparant mogelijk te maken, zodat individuele initiatieven gefaciliteerd kunnen worden. Een andere praktische implicatie heeft van doen met de kennelijke afstand tussen onderwijzend personeel en schoolmanagement. Door het intensiever en eerder betrekken van docenten bij veranderingen in het personeelsbeleid kan die afstand worden verkleind. De derde praktische aanbeveling moedigt onderwijsinstituten aan om alternatieve initiatieven te verkennen voor professionele ontwikkeling van onderwijzend personeel. Door docenten verantwoordelijkheid en mogelijkheden te bieden voor hun professionele ontwikkeling wordt de kans kleiner dat docenten hun werk percipiëren als het uitvoeren van routinetaken. Door hen zelfgekozen professionaliseringsactiviteiten te laten ontplooien worden docenten aangemoedigd om zichzelf als autonome professionals te zien en daar ook naar te handelen.

References

Akkerman, S., Petter, C., & De Laat, M. (2008). Organising communities-of-practice: facilitating emergence. *Journal of Workplace Learning, 20*, 383-399.

Argyris, C., & Schön, D. A. (1978). *Organizational learning: A theory of action perspective.* Reading, MA: Addison-Wesley.

Argyris, C., & Schön, D. A. (1996). *Organizational learning II: Theory, method, and practice.* Reading: Addison-Wesley.

Atay, D. (2008). Teacher research for professional development. *ELT journal, 62*, 139-147.

Barnett, J., & Hodson, D. (2001). Pedagogical context knowledge: Towards a fuller understanding of what good science teachers know. *Science Teacher Education, 85*, 426-453.

Beijaard, D., & Verloop, N. (1996). Assessing teachers' practical knowledge. *Studies in Educational Evaluation, 22*, 275-286.

Beijaard, D., Verloop, N., & Vermunt, J. D. (2000). Teachers' perceptions of professional identity: An exploratory study from a personal knowledge perspective. *Teaching and Teacher Education, 16*, 749-764.

Beijaard, D., Verloop, N., Wubbels, T., & Feiman-Nemser, S. (2000). The professional development of teachers. In Simons, P. R., Van der Linden, J. L. & Duffy, T. M. (Eds.), *New learning* (pp. 261-274). Dordrecht, The Netherlands: Kluwer Academic Publishers.

Bergen, T., & Van Veen, K. (2004). Het leren van leraren in een context van onderwijsvernieuwingen: Waarom is het zo moeilijk? *VELON Tijdschrift voor Lerarenopleiders, 25*, 29-39.

Berings, M. (2006). *On-the-job learning styles: Conceptualization and instrument development for the nursing profession.* Unpublished Dissertation, Tilburg University, Tilburg, The Netherlands.

Biemans, H., Nieuwenhuis, L., Poell, R. F., Mulder, M., & Wesselink, R. (2004). Competence-based VET in the Netherlands: Background and pitfalls. *Journal of Vocational Education & Training, 56*, 523-538.

Blau, G., Andersson, L., Davis, K., Daymont, T., Hochner, A., Koziara, K., Portwood, J., & Holladay, B. (2008). The relation between employee organizational and professional development activities. *Journal of Vocational Behavior, 72*, 123-142.

Boekaerts, M., & Simons, P. R. J. (1993). *Leren en instructie. Psychologie van de leerling en het leerproces.* [Learning and instruction. Psychology of the pupil and the learning process]. Assen, The Netherlands: Dekker & Van de Vegt.

Bolhuis, S. (2000). *Naar zelfstandig leren. Wat doen en denken docenten?* [Towards independent learning. What do teachers do and think?], Dissertation, Radboud University Nijmegen, Leuven/Apeldoorn, The Netherlands: Garant.

Boon, C. (2008). *HRM and fit: Survival of the fittest!?* Unpublished Dissertation, Erasmus University Rotterdam, Rotterdam, The Netherlands.

Bottrup, P. (2005). Learning in a Network: A "third way" between school learning and workplace learning? *Journal of Workplace Learning, 17*, 508-520.

Boud, D., & Middleton, H. (2003). Learning from others at work: Communities of practice and informal learning. *Journal of Workplace Learning, 15*, 194-202.

Bryan, L. A. (2003). Nestedness of beliefs: Examining a prospective elementary teacher's belief system about science teaching and learning. *Journal of Research in Science Teaching, 40*, 835-868.

Casey, A. (2005). Enhancing individual and organizational learning: A sociological model. *Management Learning, 36*, 131-147.

Clandinin, D. J. (2008). Creating learning spaces for teachers and teacher educators. *Teachers and Teaching: theory and practice, 14*, 385–389.

Collins, A., Brown, J. S., & Newman, S. E. (1989). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In Resnick, L. B. (Ed.), *Knowing, learning and instruction - Essays in honor of Robert Glaser*: Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.

Connelly, M. F., Clandinin, D. J., & Fang He, M. (1997). Teachers practical knowledge on the professional knowledge landscape. *Teaching and Teacher Education, 13*, 665-674.

Crossan, M. M., Lane, H. W., & White, R. E. (1999). An organizational learning framework: From intuition to institution. *Academy of Management Review, 24*, 522-537.

Dall'alba, G., & Sandberg, J. (1996). Educating for competence in professional practice. *Instructional Science, 24*, 411-437.

De Bruijn, E. (2004). *Beroepsonderwijs in ontwikkeling.* [Vocational education in development]. Alphen aan den Rijn, The Netherlands: Kluwer.

De Bruijn, E., Overmaat, M., Glaude, M., Heemskerk, I., Leeman, Y., Roeleveld, J., & Van de Venne, L. (2005). Krachtige leeromgevingen in het middelbaar beroepsonderwijs: Vormgeving en effecten. [Results of powerful learning environments in vocational education] *Pedagogische Studiën, 82*, 77-95.

De Jong, C., Hoekstra, T., Van der Wel, M., & Wensink, J. (2005). *Competentieleren in het VMBO: ontwikkelingsvoorbeelden uit de praktijk.* Amersfoort: CPS onderwijsontwikkeling en Advies.

Dijsselbloem, J. (2008). *Parlementair onderzoek onderwijsvernieuwingen.* [Parlementary investigation educational reforms] 's-Gravenhage. Retrieved 2 april 2009 from http://www.tweedekamer.nl/images/kst113842.8s_tcm118-149847.PDF.

Dooner, A., Mandzuk, D., & Clifton, R. A. (2008). Stages of collaboration and the realities of professional learning communities. *Teaching and Teacher Education, 24*, 564-574.

Engeström, Y., Toiviainen, H., Pasanen, A., & Haavisto, V. (2004). *Collaborative concept formation at work.* Academy of Management Meeting, New Orleans, USA.

Erickson, G., Minnes Brandes, G., Mitchell, I., & Mitchell, J. (2005). Collaborative teacher learning: Findings from two professional development projects. *Teaching and Teacher Education, 21,* 787-798.

Flick, U., Von Kardoff, E., & Steinke, I. (2004). *A compagnon to qualitative Research.* London: Sage.

Foot, S., & Megginson, D. (1996). Competence-based Vocational Education: Ten years on and still down the wrong path? *Education & Training, 38,* 17-27.

Forman, D. C. (2004). Changing perspectives from individual to organizational learning. *Performance Improvement, 43,* 16-21.

Fürstenau, B. (2003). Exploration of an industrial enterprise as a method of boundary-crossing in vocational education. In Tuomi-Grohn, T. & Engestrom, Y. (Eds.), *Between School and Work. New Perspectives on Transfer and Boundary crossing* (pp. 85-118). Amsterdam, The Netherlands: Pergamon.

Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal, 38,* 915-945.

Geijsel, F. (2001). *Schools and Innovations. Conditions fostering the implementation of educational innovations.* Unpublished Dissertation, Radboud University Nijmegen, Nijmegen, The Netherlands.

Geurts, J. (2003). Van Opleidingsfabriek naar Loopbaancentrum. Pleidooi voor een integraal herontwerp van het middelbaar beroepsonderwijs [From educational factory to careercentre. A plead for an integral redesign for vocational education]. In *Gids voor het beroepsonderwijs en volwasseneneducatie* (pp. E521-E528). Alphen a/d Rijn: Samsom.

Glaser, B. G. (2004). Naturalist inquiry and grounded theory. *Forum: Qualitative Social Research, 5,* 1-14.

Grieves, J., & Hanafin, P. (2005). Human resource management: The Achilles heel of school governance. *Employee Relations, 27,* 20-46.

Guile, D., & Young, M. (2003). Transfer and transition in vocational education: some theoretical considerations. In Tuomi-Gröhn, T. & Engeström, Y. (Eds.), *Between school and work: new perspectives on transfer and boundary-crossing* (pp. 63-81). Amsterdam, The Netherlands: Pergamon.

Hargreaves, A. (2005). Educational change takes ages: Life, career and generational factors in teachers' emotional responses to educational change. *Teaching and Teacher Education, 21*, 967–983.

Henze, I., Van Driel, J., & Verloop, N. (2005). De praktijkkennis van ervaren betadocenten in de context van de invoering van het vak Algemene Natuurwetenschappen *Pedagogische Studiën, 82*, 59-76.

Henze, I., Van Driel, J., & Verloop, N. (2007a). The change of science teachers' personal knowledge about teaching models and modelling in the context of science education reform. *International Journal of Science Education, 29*, 1819-1846.

Henze, I., Van Driel, J., & Verloop, N. (2007b). Science teachers' knowledge about teaching models and modelling in the context of a new syllabus on public understanding of science. *Research in Science Education, 37*, 99-122.

Hodkinson, H., & Hodkinson, P. (2005). Improving schoolteachers' workplace learning. *Research Papers in Education, 20*, 109-131.

Hoekstra, A. (2007). *Experienced teachers' informal learning in the workplace.* Unpublished Dissertation, Utrecht University, Utrecht, The Netherlands.

Interdepartementair Beleids Onderzoek VMBO. (2005). Het VMBO: Beelden, feiten en toekomst. [PreVocational Secondary Education (PVSE): Image, facts and future] Retrieved 12/09/2006, from http://www.voortijdigschoolverlaten.nl/docs/21.IBOVMBO.pdf

John, P. D. (2002). The teacher educator's experience: case studies of practical professional knowledge. *Teaching and Teacher Education, 18*, 323-341.

Kallenberg, A. J. (2004). *Tussen opleiden en professionele ontwikkeling. Leren (en) organiseren van nieuwe arrangementen.* Lectorale rede, Hogeschool Leiden.

Kervezee, C. (2006). *De staat van het onderwijs, Onderwijsverslag 2004/2005*. [The condition of education, Educational report 2004/2005] Retrieved 16 december 2008 from http://www.staatvanhetonderwijs.nl/pdf/onderwijsverslag.pdf.

Klein, J. H., Connell, N., & Meyer, E. (2005). Knowledge charasteristics of communities of practice. *Knowledge management research & practice, 3*, 106-114.

Knapp, M. S. (1997). Between systemic reforms and the mathematics and science classroom: The dynamics of innovation, implementation, and professional learning. *Review of Educational Research, 67* 227-266.

Knight, P. (2002). A systemic approach to professional development: Learning as practice. *Teaching and Teacher Education, 18*, 229-241.

Knowles, M. S. (1973). *The adult learner: A neglected species.* Houston: Gulf Publishing Company.

Korthagen, F., Loughran, J., & Russell, T. (2006). Developing fundamental principles for teacher education programs and practices. *Teaching and Teacher Education, 22*, 1020-1041.

Kwakman, K. (1999). *Leren van docenten tijdens de beroepsloopbaan. Studies naar professionaliteit op de werkplek in het voortgezet onderwijs.* Unpublished Dissertation, Radboud University Nijmegen, Nijmegen, The Netherlands.

Kwakman, K. (2003a). Factors affecting teachers' participation in professional learning activities. *Teaching and Teacher Education, 19*, 149-170.

Kwakman, K. (2003b). Leren van professionals tijdens de beroepsuitoefening. In Kessels, J. W. M. & Poell, R. F. (Eds.), *Human Resource Development. Organiseren van het leren.* (pp. 229-242): Kluwer.

Lambert, P. (2003). Promoting developmental transfer in vocational teacher education. In Tuomi-Grohn, T. & Engestrom, Y. (Eds.), *Between school and work: New perspectives on transfer and boundary crossing.* (pp. 233-254). Amsterdam, The Netherlands: Pergamon.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Cambridge, UK: Cambridge University Press.

Lohman, M. C. (2006). Factors influencing teachers' engagement in informal learning activities. *Journal of Workplace Learning, 18*, 141-156.

Loughran, J. (2007). Researching teacher education practices: Responding to the challenges, demands, and expectations of self-study. *Journal of Teacher Education, 58*, 12-20.

Loyens, S., Rikers, R., & Schmidt, H. (2006). Students' conceptions of constructivist learning: A comparison between a traditional and a problem-based learning curriculum. *Advances in Health Sciences Education, 11*, 365-379.

Meijers, F., & Wardekker, W. (2001). Ontwikkelen van een arbeidsidentiteit [The development of a professional identity]. In Kessels, J. & Poell, R. F. (Eds.), *Human Resource Development: Organiseren van het leren* (pp. 301-317). Aplhen a/d Rijn: Samsom.

Meirink, J. A. M. (2007). *Individual teacher learning in a context of collaboration in teams.* Unpublished doctoral dissertation: Leiden University.

Miles, M. B., & Huberman, A. M. (1994). *A Qualitative Data Analysis: an expanded source book.* (2nd ed.). Thousand Oaks, CA: SAGE publications.

Ministerie van Onderwijs, Cultuur & Wetenschap. (2005). Kerncijfers 2000-2004 Onderwijs, Cultuur en Wetenschap.   Retrieved 12/09/2006, from http://www.minocw.nl/documenten/kerncijfers2000_2004.pdf#search=%22EU-benchmark%22

Mittendorff, K., Geijsel, F., Hoeve, A., De Laat, M., & Nieuwenhuis, A. F. M. (2006). Communities of practice as stimulating forces for collective learning. *Journal of Workplace Learning, 18*, 298-312.

Montague, W. E., & Knirk, F. G. (1993). What works in adult instruction: The management design and delivery of instruction. *International Journal of Educational Research, 19*, 333-344.

Mulder, M. (2002). *Competentieontwikkeling in organisaties. Perspectieven en praktijk.* 's-Gravenhage, The Netherlands: Elsevier Bedrijfs Informatie.

Mulder, M., Weigel, T., & Collins, K. (2007). The concept of competence in the development of vocational education and training in selected EU member states: A critical analysis. *Journal of Vocational Education and Training, 59*, 67-88.

Nieuwenhuis, A. F. M. (1991). *Complexe leerplaatsen in school en bedrijf. Een studie naar de implementatie en leereffecten van participerend leren in het middelbaar beroepsonderwijs.* [Complex learning settings in school and business. A study regarding implementation and learning effects of practise learning in senior secondary vocational education]. Groningen, The Netherlands: RUG/RION.

Nishii, L. H., & Wright, P. M. (2008). Variability within organizations: Implications for strategic human resource management. In Smith, D. B. (Ed.), *The people make the place: dynamic linkages between individuals and organizations* (pp. 225-248). New York: Taylor & Francis Group.

Novak, J. D. (2002). Meaningful learning: The essential factor for conceptual change in limited or inappropriate propositional hierarchies leading to empowerment of learners. *Science Education, 86*, 548-571.

Onstenk, J. H. A. M. (1997). *Lerend leren werken en innoveren. Brede vakbekwaamheid en de integratie van leren, werken en innoveren.* [Studying learning to work and innovate. A broad craftsmanship and the integration of learning, working and innovating] Unpublished Dissertation, Radboud University Nijmegen, Nijmegen, The Netherlands.

Onstenk, J. H. A. M. (2001). Van opleiden op de werkplek naar leren op de werkplek. [From workplace training to workplace learning] *Pedagogische Studiën, 78*, 134-140.

Oosterheert, I. E. (2001). *How student teachers learn: a psychological perspective on knowledge construction in learning to teach.* Unpublished Dissertation, University of Groningen, Groningen, The Netherlands.

Poell, R. F. (1998) Organizing work-related learning projects: A network approach. Unpublished Dissertation, Radboud University Nijmegen, Nijmegen, The Netherlands.

144

Poell, R. F., Chivers, G. E., Van der Krogt, F. J., & Wildemeersch, D. A. (2000). Learning-network theory: Organizing the dynamic relationships between learning and work. *Management Learning, 31*, 25-49.

Prawat, R. S. (1989). Promoting access to knowledge, strategy, and disposition in students: A research synthesis. *Review of Educational Research, 59*, 1-41.

Reigeluth, C. M. (1999). *Instructional design theories and models. A new paradigm of instructional theory.* (Vol. II). London: Lawrence Erlbaum Associates.

Ritzen, H. (2004). *Zinvolle leerwegen. Actieonderzoek naar innovatieve leeromgevingen voor leerlingen van kwalificatieniveaus 1 en 2.* [Meaningful learning pathways. Action research of innovative learning environments for students of qualification levels 1 and 2] Unpublished Dissertation, Radboud University Nijmegen, Nijmegen, The Netherlands.

Rowan, B. (1990). Commitment and control: Alternative strategies for the organizational design of schools. *Review of Reseach in Education, 16*, 353-389.

Rowan, B. (1995). The organizational design of schools. In Bacharach, S. B. & Mundell, B. (Eds.), *Images of schools. Structures and roles in organizational behavior* (pp. 11-42). Thousand Oaks, CA: Corwin Press.

SBO IPB (2005). *Handboek Integraal Personeelsbeleid Voortgezet Onderwijs, deel 1-5.* Den Haag: SBO IPB.

Seezink, A., Poell, R. F., & Kirschner, P. A. (2009). Teachers' individual action theories about competence-based education: The value of the cognitive apprenticeship model. *Journal of Vocational Education & Training, 61*, 203-215.

Seezink, A., & Van der Sanden, J. M. M. (2005). Lerend werken in de docentenwerkplaats: Praktijktheorieen van docenten over competentiegericht voorbereidend middelbaar beroepsonderwijs. [Learning and working within a teachers' workplace: Teachers' practical theories about competence oriented prevocational secondary education] *Pedagogische Studiën, 82*, 275-292.

Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher, 27*, 4-13.

Shaughnessy, J. J., Zeichmeister, E. G., & Zeichmeister, J. S. (2000). *Research methods in psychology.* (5th ed.). Singapore: McGrraw-Hill Company.

Slaats, A., Lodewijks, H. G. L. C., & Van der Sanden, J. M. M. (1999). Learning styles in secondary vocational education: Disciplinary differences. *Learning and Instruction, 9*, 475-492.

Sluijsmans, D. M. A., Straetmans, G. J. J. M., & Van Merriënboer, J. J. G. (2008). Integrating authentic assessment with competence-based learning in vocational education: The protocol of portfolio scoring. *Journal of Vocational Education & Training, 60*.

Smith, T. M., & Rowley, K. J. (2005). Enhancing commitment or tightening control: The function of teacher professional development in an era of accountability. *Educational Policy, 19,* 126-154.

Taconis, R. (1995). *Understanding based problem solving: Towards qualification-oriented teaching and learning in physics education.* Unpublished Dissertation, Eindhoven University of Technology, Eindhoven, The Netherlands.

Ten Dam, G. T. M., & Blom, S. (2006). Learning through participation. The potential of school-based teacher education for developing a professional identity. *Teaching and Teacher Education, 22,* 647-660.

Tuomi-Gröhn, T., & Engeström, Y. (2003). Conceptualising transfer: from standard notions to developmental perspectives. In Tuomi-Gröhn, T. & Engeström, Y. (Eds.), *Between school and work: new perspectives on transfer and boundary-crossing* (pp. 19-38). Amsterdam, The Netherlands: Pergamon.

Van de Sande, R. A. W. (2007). *Competentiegerichtheid en scheikunde leren. Over metacognitieve opvattingen, leerresultaten en leeractiviteiten.* [Competence mindedness and learning chemistry: About metacognitive beliefs, learning outcomes, and learning activities] Unpublished Dissertation, Eindhoven University of Technology., Eindhoven, The Netherlands.

Van den Berg, N., & De Bruijn, E. (2009). *Het glas vult zich: Kennis over vormgeving en effecten van competentiegericht beroepsonderwijs; verslag van een review.* [The glass

is filling: Knowledge about design and effects of competence-based vocational education; report of a review study]. 's-Hertogenbosch, The Netherlands: Expertisecentrum Beroepsonderwijs.

Van der Krogt, F. J. (2007). *Organiseren van leerwegen: Strategieën van werknemers, managers en leeradviseurs in dienstverlenende organisaties.* [Organizing learning paths: Strategies of workers, managers, and consultants in service organizations]. Rotterdam, The Netherlands: Performa.

Van der Krogt, F. J., & Warmerdam, J. (1997). Training in different types of organizations: Differences and dynamics in the organization of learning and work. *International Journal of Human Resource Management, 8*, 87-105.

Van der Linden, R., Seezink, A., & Vermeulen, M. (2006,). *Leer-/Werkgemeenschappen in het VMBO: Kortlopend onderwijsonderzoek.* [Learning and working communities within PVSE: Short-term educational research] Paper presented at the Onderwijs Research Dagen, VU Amsterdam, The Netherlands.

Van der Linden, R., Teurlings, C. C. J., & Zuylen, J. (2007). *Leer-/werkgemeenschappen in het vmbo.* [Communities of practice in prevocational secondary education]. Tilburg, The Netherlands: MesoConsult.

Van der Sanden, J. M. M. (2004). *Ergens goed in worden: Naar leerzame loopbanen in het beroepsonderwijs.* [Becoming competent: Towards rich learning careers in vocational education]. Inaugural speech, Eindhoven, The Netherlands: Fontys Pedagogisch Technische Hogeschool.

Van der Sanden, J. M. M., Kok, H., & Van Os, M. (2003). *Naar aantrekkelijk technisch vmbo. Resultaten van drie jaar herontwerp.* [Towards attractive technical prevocational secondary education. Results of three years of redesign]. Delft, The Netherlands: Axis.

Van der Sanden, J. M. M., Seezink, A., & Taconis, R. (2005). *SOAP at work; new partnerships between schools and teacher training institutes.* ISCAR Conference, Seville, Spain.

Van der Sanden, J. M. M., Spit, P., & Schouten, T. (1999). Algemene vaardigheden in de sector techniek van het voorbereidend middelbaar beroepsonderwijs. In Lodewijks, J. G. L. C. & Van der Sanden, J. M. M. (Eds.), *Op de student gericht. Een bundel opstellen over leren en studeren, opgedragen aan Prof. Dr. Len. F. W. de Klerk* (pp. 37-50). Tilburg, The Netherlands: Tilburg University Press.

Van der Sanden, J. M. M., Streumer, J. N., Doornekamp, B. G., & Teurlings, C. C. J. (2001). *Bouwstenen voor vernieuwend Voorbereidend Middelbaar Beroepsonderwijs.* [Building blocks for innovative Prevocational Secondary Education]. Utrecht, The Netherlands: Algemeen Pedagogisch Studiecentrum.

Van der Sanden, J. M. M., & Teurlings, C. C. J. (2003). Developing competence during practice periods: the learners perspectives on transfer. In Tuomi-Gröhn, T. & Engeström, Y. (Eds.), *Between school and work: new perspectives on transfer and boundary-crossing* (pp. 119-138). Amsterdam, The Netherlands: Pergamon.

Van Driel, L. (2006). *Professionalisering in school: Een studie naar verbetering van het pedagogischdidactisch handelen.* [Professional development within school: A study towards improvement of pedagogic didactic behavior] Unpublished Dissertation, Utrecht University, Utrecht, The Netherlands.

Van Eekelen, I. M. (2005). *Teachers' will and way to learn: studies on how teachers learn and their willingness to do so.* Unpublished Dissertation, Maastricht University, Maastricht, The Netherlands.

Van Merriënboer, J. J. G., Van der Klink, M. R., & Hendriks, M. (2002). *Competenties: van complicaties tot compromis. Over schuifjes en begrenzers.* [Competences: From complication towards compromise. About slides and limiters]. Den Haag: Onderwijsraad.

Van Tartwijk, J., Den Brok, P., Veldman, I., & Wubbels, T. (2009). Teachers' practical knowledge about classroom management in multicultural classrooms. *Teaching and Teacher Education, 25*, 453-460.

Van Velzen, J. H. (2002). *Instruction and self-regulated learning: promoting students'* *(self-) reflective thinking.* Unpublished Dissertation, Leiden University, Leiden, The Netherlands.

Van Woerkom, M. (2003). *Critical reflection at work: Bridging individual and organizational learning.* Unpublished Dissertation, Twente University, PrintPartners Ipskamp, Enschede, The Netherlands.

Verloop, N. (1995). De Leraar [The teacher]. In Lowyck, J. & Verloop, N. (Eds.), *Onderwijskunde: Een kennisbasis voor professionals* (pp. 194-249). Groningen, The Netherlands: Wolters-Noordhoff.

Vermunt, J. D., & Verschaffel, L. (2000). Process-oriented teaching. In Simons, P. R., Van der Linden, J. L. & Duffy, T. M. (Eds.), *New Learning* (pp. 209-225). Dordrecht, The Netherlands: Kluwer Academic Publishers.

Weigel, T., Mulder, M., & Collins, K. (2007). The concept of competence in the development of vocational education and training in selected EU member states. *Journal of Vocational Education & Training, 59*, 53-66.

Wenger, E., Mcdermott, R. M., & Snyder, W. M. (2002). *Cultivating Communities of Practice.* Boston, MA: Harvard Business School.

Wesselink, R., Biemans, H., Mulder, M., & Van den Elsen, E. R. (2007). Competence-based VET as seen by Dutch researchers. *European journal of vocational training, 40*, 38-51.

Zanting, A., Verloop, N., & Vermunt, J. D. (2001). Student teachers eliciting mentors' practical knowledge and comparing it to their own beliefs. *Teaching and Teacher Education, 17*, 725-740.

Curriculum Vitae

Audrey Seezink was born on the 31th of March, 1981, in Spaubeek. She studied Cognitive Psychology at Maastricht University, where she specialized in Educational Psychology and Cognitive Ergonomics. Her thesis regarding the supporting role of portfolio assessment in competence-based curricula was written at the Educational Technology Expertise Centre (currently known as Centre for Learning Sciences and Technologies) at the Open University of the Netherlands. In 2003 she started a PhD-project funded by the Netherlands Organization for Scientific Research regarding the role of teachers in competence-based prevocational education. Besides conducting this PhD project, she started in 2006 as a lecturer Educational Sciences at the Teacher Training Institute Tilburg at Fontys University of Applied Sciences. Currently she is still employed at the Teacher Training Institute and has expanded her professional activities.