Development of teacher competence during the professional career: An interpersonal perspective

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Introduction

Just like in many other western countries, the quality and quantity of the teaching force is under increasing pressure in the Netherlands. In their recent advice to the Minister of Education and Sciences, the Committee Teachers (Commissie Leraren, 2007) reports that the coming seven years, about 75% of the current teachers will leave the profession. Retirement is one major reason for this. Another reason is that many teachers leave the profession prematurely. In 1999, Macdonald reviewed the literature on teacher attrition, which he defined as teachers leaving the profession prematurely and voluntarily, and which he separated from teacher mobility. His review indicated that in most countries teacher attrition rates are between 5 and 30 percent. An even higher percentage has been reported for the USA: between 40 and 50 percent within the first five years (Ingersoll & Smith, 2003). One stable finding is that attrition is very high for young or new teachers and lower for older or more experienced teachers until they reach ages at which retirement is feasible (Guarino, Santiñañez, & Daley, 2006). In the Netherlands the percentage of qualified teachers that leaves the profession after only one year of teaching has increased to 8% of the teachers (CBS, 2007). The percentage that stops after two years of teaching is increasing as well.

Teachers who stay in the profession but experience teaching as stressful may, in the long run, suffer from burnout. According to the Dutch Central Bureau for Statistics (Hupkens, 2007) the burnout rate for Dutch teachers is 13 percent, which is higher than for any other profession. The reasons for, and frequency of teacher attrition and burnout are different for different phases of the teaching career (Huberman, 1993; Guarino et al., 2006). For this reason, research into the teaching career can contribute to explanations of differences in the quality of teacher careers.

A research project on the development of teacher interpersonal competence

Problems with teacher student relationships issues seem to be the most important policy amendable reason for teacher attrition early in the career (MacDonald, 1999; Ingersoll & Smith, 2003), and an important factor for teacher stress and burnout later in the career (Tatar & Horenczyk, 2003). Many experienced and inexperienced teachers experience problems in this domain (Veenman, 1984; Evertson & Weinstein, 2006). Teacher interpersonal competence is an important factor in creating and maintaining positive relationships with students and enhancing the quality of the teaching career (Wubbels, Brekelmans, den Brok, & van Tartwijk, 2006). In Dutch educational research competence is usually used to refer to an integrated cluster of knowledge, skills, and attitudes that is necessary to fulfil specific tasks at a required level (NWO-PROO, 2007). To be able to grasp the development of teachers we will therefore focus on the development of the interpersonal competence of teachers in this research project, and answer the question:

What are the characteristics of teacher interpersonal competence at various stages of the teacher career and how do these characteristics relate to the quality of the teaching career?

In this interlinked research project we want to expand the empirical knowledge base on the development of teacher competence by characterizing competences in different phases of the teaching career. Studies focussing on the entire teaching career are scarce. Most studies on teacher career development focus on short time spans such as the start of the career. Almost 20 years ago Floden and Huberman (1989) concluded in a "state of the art" article that most research on teachers' professional lives was still at a descriptive stage. These descriptions usually relied on (retrospective) self-reports of teachers and frequently addressed career engagement and satisfaction. Floden and Huberman asked for finer-grained descriptive studies and more causal and longitudinal work, but also for more focus on daily classroom practice at different moments during the entire teaching career. In this project, we will investigate the development of the three components of teacher interpersonal competence throughout the career and their relationship with the quality of teacher career (attrition, burnout, work engagement), work characteristics and personal factors. In our research project we conceptualize development of competence in terms of the way teacher knowledge, skills and attitudes change when teachers get more experienced.

Three PhD projects will be carried out, that collect an integral data set including secondary teachers who have just started their career (beginner), who have
been teaching ten to fifteen years (experienced) and teachers with more than twenty years of experience (senior).

- The first PhD project will focus on the development of the interpersonal component of professional identity throughout the teaching career. It will investigate how this development is related to the other components of interpersonal competence (interpersonal behavioural repertoire and teacher knowledge), and students’ perceptions of teacher-student relationships. It will also investigate how the development of interpersonal competence is influenced by work and personal variables (including professional development) and how it relates to the quality of the teaching career.

- The second project will focus on the development of teacher knowledge about teacher-students interaction throughout the teaching career. It will investigate how this development is related to the other components of interpersonal competence (interpersonal behavioural repertoire and the interpersonal component of teacher identity), and students’ perceptions of teacher-student relationships. It will also investigate how the development of interpersonal competence is influenced by work and personal variables and how it relates to the quality of the teaching career.

- The third project will focus on the development of teachers’ interpersonal behavioural repertoire. It will investigate how the development of teacher interpersonal behavioural repertoire is related to the other components of interpersonal competence (professional identity and teacher knowledge), and students’ perceptions of teacher-student relationships (as an indicator of the integrated level of teacher interpersonal competence). It will also investigate how the development of teacher interpersonal behavioural repertoire is influenced by work characteristics and personal variables (including professional development) and how it relates to the quality of the teaching career.

Here, we will first describe the theory that will be used in the project, subsequently we will describe the design, the methods for data gathering, and the planning of the project.

Theoretical frame of reference

In this project we will make use of concepts originating from different theoretical frames and from different lines of research to conceptualize the development of teacher competence during the teaching career and the quality of the teaching career. Underneath we describe them.

Dynamic system theory

Fundamental to all three PhD projects in the interrelated research project, will be the dynamic systems (DS) theory. DS theorist are fundamentally concerned with the interrelations between two separate time scales of development, a micro-social (moment-to-moment) scale and a macro-social (developmental) scale. They put a great deal of emphasis on understanding the changing patterns of real-time behaviour as they relate to changes in developmental patterns. Bronfenbrenner and Morris’s (1998) bio-ecological theory posits that proximal processes operating over time (e.g. teacher-student interactions) are the “primary engines of development”. Negative (self-stabilizing) feedback is the mechanism by which micro-social processes determine macro-level outcomes. In turn, these macro-level factors function as cascading constraints serving both as outcomes (of previous processes) and as risk factors (for subsequent processes). In studying the development of teacher competence we conceptualize competence on both time scales and study effects of micro-level concepts (teacher-student behaviour, scripts, appraisals) on macro-level concepts (professional identity, practical knowledge, behavioural repertoire) and vice versa.

Attractors

In DS terminology, patterns of interactions or stable states are called attractors. They emerge through coupling, or cooperativity, among lower order system elements. Attractors may be understood as absorbing states that “attract” the system from other potential states. Behaviour moves towards these attractors in real time, and to the extent that this movement is indeterminate, this can be described as self-organization at the scale of real time. Over developmental time, attractors represent recurrent patterns that eventually stabilize and become increasingly predictable.
As recurrent stable forms, attractors have been depicted topographically as “valleys” on a dynamic landscape. The deeper the attractor, the more likely it is for behaviour to fall into it and remain there, and the more resistant it is to small changes in the environment. As the system develops a unique state space defined as the model of all possible states a system can attain, is configured by several coexisting attractors (multi-stability, Kelso, 1995). Having multiple attractors and flexibility in moving from one attractor (e.g. hostile) to another (e.g. cooperative) shows the extent to which dyads (e.g. teacher-class) are able to repair certain negative interactions when they occur. For understanding the development of the macro-social development process, it is not only important to identify the contents of attractors, but also to assess dyads ability to move from one attractor to another, and the conditions (personal, environmental) under which dyads do so flexibly and which emotions, cognitions and behavioural repertoire is important for this. After specific attractors emerge and stabilize there might be a loss of degree of freedom over development: behavioural landscapes become more and more articulated such that some attractors become larger and more accessible whereas others become smaller and less accessible.

**Feedback as a mechanism for self-organization**

Dynamic systems self-organize through the interplay of two basic mechanisms: positive and negative feedback. Positive feedback is defined as the means by which interactions among system elements amplify particular variations, leading to the emergence of novelty. Through negative feedback the system converges to the attractor, deviations are minimized and stability realised. Self-organizing systems develop and become complex through the interaction of both feedback processes; positive feedback catalyzes reorganizations in response to environmental changes and these new organizations are maintained through the self-stabilizing properties of negative feedback. Feedback on both real-time and developmental time scale may be the mechanism by which characteristic dyadic states emerge, develop, and stabilize (an important type of real-time feedback mechanism is e.g. negative reinforcement).

**Circular causality**

Circular causality is important for modelling the link between real-time and developmental time processes.

Circular causality suggests that interactions among lower order elements provide the means by which higher order patterns emerge; in turn these higher order patterns exert top-down influences (constraint of cognitive and emotional elements) to maintain the entrainment of lower order components. Real-time interactions provide bottom up influences that are reciprocated by top down influences, recurring over time. Self organization at the real-time scale constrains self organization at the developmental scale, which in turn constrains real time behaviour.

Circular causality can also help to explain movements of the system towards specific behavioural attractors from personal cognitive and emotional elements (personality specific attractors, Lewis, 1995) and how a specific behavioural attractor can induce personal attractors. For example negative attributions towards students can explain why a teacher becomes angry even when a student’s behaviour is not particularly aversive. Through teacher behaviour these emotion-cognition amalgams are likely to couple with students uncertainty or frustration, increasing the stabilization of negative attractors. Teachers and students might develop generalized emotions and cognitions (e.g. generalized anticipated aversiveness in the behaviour of a student, low self efficacy of teachers) that act as personal constraints in subsequent interactions. There is some preliminary support for the idea that, once particular dyadic emotions and appraisals have coupled and the behavioural patterns with which they are linked have stabilized, fewer and less triggers are necessary to drive dyads to their habitual attractors. These type of insights may help to explain why in positive teacher-students relationships corrections with low intensity are sufficient to make students return their attention to task activity, while in more negative teacher-students relationships only small misbehaviour of students may trigger repressive teacher reactions with large intensity.

**Describing teacher behavioural repertoire from a DS perspective**

At the micro-social “moment-to-moment” level, teachers’ interpersonal behaviour repertoire can be described by the specific interactions of teacher and
student behaviour occurring in specific situations. At the macro-social developmental outcome level, teachers’ interpersonal behaviour repertoire can be characterized by the pattern of multi stable states over different situations: content (type of repertoire) and number (flexibility/rigidity) of attractors.

In the context of development of teacher behavioural repertoire during the teaching career, relevant research questions are: how are behavioural reactions in specific situations related to patterns of multi stable stated, how are different patterns of multi stable states related to the perception of students of teacher class relationship (e.g. we hypothesize patterns of warm and positive attractors, and less permissive (inconsistent, indiscriminating, overly lax) attractors characteristic for healthy relationships), and what are differences between teachers of different career phases regarding type and flexibility of repertoire?

### Development of teacher interpersonal competence

Since a longitudinal study on the entire teaching career is a complex project, some kind of reduction is needed. As motivated above, we will focus on teacher competence from an interpersonal perspective. Using an interpersonal perspective means studying teacher competence from the perspective of the relationship teachers establish with their students (e.g. Wubbels & Levy, 1993). This perspective can be distinguished from other perspectives, such as a learning-activities or content perspective (Wubbels, et al., 2006). Research has shown that students’ perceptions of the relationship are related to student outcomes in different subject areas (Wubbels et al, 2006), and that healthy teacher-student interpersonal relationships are a prerequisite for engaging students in learning activities (Brekelmans, Sleegers, & Fraser, 2000). Moreover, healthy teacher-student interpersonal relationships are positively related to teachers’ satisfaction with their profession and the prevention of burnout (e.g. Ben-Chaim & Zoller, 2001; Wubbels & Levy, 1993).

In the VITAE-project (Day et al, 2006), variation in the work, lives, and effectiveness of 300 school teachers in England were studied over a three-year period in different phases of the teaching career. Results suggest that the portrayal of teachers requires an investigation into factors not only within organisational settings (Huberman, 1993), but also how these factors interact with and are managed in conjunction with factors arising from teachers personal lives (see also Ballet, Kelchtermans, Berens, & Jansens, 2000). In the VITAE-project the declining commitment of the teachers was related to workload, pupil behaviour and poor leadership. Positive relations with pupils proved to be central to teachers’ self-efficacy and ability to teach well.

In our own longitudinal study on the development of teacher-student relationships (Brekelmans, Wubbels, & van Tartwijk, 2005), we analyzed data from 343 teachers that were collected each year during a 2–20 year period. Growth trajectories in these relationships were estimated for the first 20 years of the teaching career using multi-level analyses (Figure 1 a & b). Results showed that, according to students, at the start of the career teacher-students relationships get more healthy (growing Influence of teachers and (however less) growing Affiliation), that there is stabilisation in the middle and towards 20 years of experi-
ence slightly growing Influence together with less Affiliation.

These results are in line with research on the development of expertise and expert performance that were recently summarized in a handbook (Ericsson, Charness, Feltovich & Hoffman, 2006). In this handbook, an expert is described as someone with highly superior performance on representative tasks in a specific domain (Ericsson et al., 2006). Expertise is described as an adaptation to task demands. This adaptation implies that people “restructure, reorganize, and refine their representation of knowledge and procedures for efficient application to their workaday environment” (Feltovich, Prietula & Ericsson, 2006, p. 57). By this adaptation, they are better able to cope with a limit of attention, a limit of working memory, and a limit of long term memory access. They also are better in recognizing why information is important for their diagnoses of a problem and are better in recognizing when the task they are facing is not within their normal routine domain of expertise and adjust accordingly. The research on expertise and expert performance shows that developing expertise takes a long time. Even for the most talented individuals, ten years of experience is generally necessary to become an expert. This is referred to as the ten-year rule (Ericsson, 2006). This indicates that experience is important for building and refining the knowledge structures that are at the core of expertise.

However, extensive experience in a domain does not invariably lead to expert levels of achievement. A concept that is important for understanding and explaining the development of expertise (Ericsson, 2006) is deliberate practice. The core assumption of deliberate practice is that expert performance is acquired gradually and that effective improvement of performance requires the opportunity to find suitable training tasks that the performer can master sequentially. An adequate evaluation and analysis of how tasks are fulfilled and where improvement is necessary is conditional. The models presented to describe deliberate practice resemble cyclic models of professional development that are common in the field of teacher education (e.g. Korthagen, Kessels, Koster, Lagerwerf, & Wubbels, 2001).

The relation between expertise and aging has been investigated extensively (Krampe & Charness, 2006). This research shows that general cognitive abilities (e.g. speed and working memory capacity) correlate negatively with age. However, the relationship between age and productivity in work settings is nearly zero or even positive. Older experts seem to profit from a larger domain related knowledge base which may compensate their decline in cognitive abilities. Furthermore, older experts develop alternative mechanisms to keep up their performance. Older experts must actively maintain the mechanisms they master and which distinguishes them from non-experts.

Teacher knowledge about teacher-students communication

Verloop, van Driel and Meijer (2001), use “teacher knowledge” or “teacher practical knowledge” to indicate the “whole of the knowledge and insights that underly teachers’ actions in practice” (p 446). They emphasize that the concept “knowledge” is used as an overarching, inclusive concept, summarizing a large variety of cognitions, from conscious and well-balanced opinions to unconscious and unreflected intuitions. Using the label teacher (practical) knowledge as the overarching concept for teacher cognitions also means encompassing tacit forms of knowledge that guide teacher behaviour in moment-to-moment classroom teaching. According to Verloop and his colleagues, it has appeared very difficult to grasp the tacit and intuitive components of teacher cognitions in research on teacher knowledge. They conclude that this makes theory development and research initiatives in this field all the more important.

Previous research at the micro-social level

Research aiming at investigating teacher knowledge about teacher-students communication at the micro-social level can build on research focusing on differences between expert and novice teachers. In this research, video-vignettes and photographs of classroom situations were shown to novices, beginning teachers, and expert teachers (Peterson & Comeaux, 1987; Berliner, 1994). It was found that expert teachers were much better in recalling, recognizing and interpreting what they saw. They also found the same events worth commenting on more often, and had the same kinds of comments. These findings indicate that expert teachers have faster and better pattern recognition capabilities, have better developed
knowledge structures or *schemas* when perceiving and interpreting phenomena related to classroom teaching than novices. However, relatively little is known about the characteristics of these knowledge structures/schemas and the interplay with teacher behaviour in specific classroom situations, and with teacher appraisal of the outcomes of this behaviour.

**Relational schemas**

The theoretical model of *relational schemas* (Baldwin, 1992) can be useful when studying the characteristics of teacher knowledge and the interplay with teacher behaviour in teacher-student interactions at the micro-social level. A relational schema can be regarded as a single cognitive structure combining representations of self, others, and a prototypical pattern of interaction between them. Self and other are represented as a self-schema and an other-schema: knowledge structures containing facts, memories, descriptors, feeling etc. about self and other. The self and other schemas are linked together by virtue of being embedded in an *interpersonal script*. These scripts consist of a series of if-then expectations involving the typical behaviours of the actors.

Relational schemas are context specific and can differ in various types of situations. For example, at the start of the lesson, a script applies in which the teacher is expected to take the initiative and students are expected to follow this initiative. This requires a series of teacher actions and typical student responses. Both teachers and students “know” their roles in this type of situation: they share knowledge of the self and other schemas that apply. However, subtle variations in teacher behaviour may go together with different student reactions. Experienced teachers, for instance, make more eye-contact (van Tartwijk, 1993) and, as a result, are perceived by the students as having more overview over the situation (van Tartwijk, Brekelmans, Wubbels, Fisher, & Fraser, 1998). As a result they need less time to start the lesson.

**Previous research at the macro-social level**

In their chapter *Handbook of Classroom Management*, Woolfolk-Hoy and Weinstein (2006) give an overview of research on the interpersonal knowledge of teachers at a more aggregated level. In this chapter, these authors use “knowledge”, “beliefs” and “perceptions” as overlapping and somewhat inter-changeable constructs. They conclude that teachers have clear knowledge (or opinions) about teacher-student interactions. This knowledge is based on personal experiences, experiences with schooling, and experiences with formal knowledge. Much of this knowledge is about strategies for handling student misbehaviour and how to create a specific relationship with students (e.g. “Don’t smile until Christmas.”) and is related to teachers’ opinions about desirable patterns in teacher-student communication. Recently, Wubbels, den Brok, Veldman and Van Tartwijk (2006) interviewed teachers teaching in Dutch secondary multicultural classrooms about the interpersonal competence teachers need in this context. Here, teachers also emphasized the importance of building positive teacher-student relations, avoiding escalation after correcting student behaviour and being knowledgeable about students’ background. As far as we know, no studies are available describing differences and similarities in this type of teacher knowledge between teachers at various stages in their career.

**The attitudinal component of teacher interpersonal competence**

The attitudinal component of teacher interpersonal competence not only comprises teachers’ attitudes with respect to (healthy) teacher-student interpersonal relationships in the classroom and their definition of an ideal teacher-student interpersonal style, but also to their self-images and definitions of themselves as interpersonal agent both within the classroom as well as within personal life. It involves questions such as: ‘What kind of relationships do I want to establish with students in the classroom?’, ‘How important are healthy teacher-student interpersonal relationships for me as a teacher?’ and ‘What type of teacher am I (from an interpersonal viewpoint)?’. As such, the attitudinal element refers to both teachers’ professional as well as their personal domains and makes up an important component of teachers’ *professional identity* (Beijaard, 1995).

**Teacher professional identity**

As a broader concept, *teacher professional identity* may be interpreted as a result of the complex interaction between the personal and professional dimension in teaching, whereby this latter dimension pertains to the teaching context and what is generally
found relevant to the profession (knowledge, skills, attitudes) (Beijaard, Meijer, & Verloop, 2004).

In his study on secondary school teachers’ professional identity, Beijaard (1995) investigated 14 themes that shape this identity. Apart from more general themes such as the subject taught and teachers’ role conceptions, the interpersonal relationship between teacher and students emerged as being very important in teachers’ perceptions of their professional identity. This aspect could be linked to at least 8 themes: bonding with pupils, preferences for (specific) pupils, respect for and by pupils, interacting with pupils, keeping distance to pupils, affective neutrality and commitment to helping pupils. Thus, the teacher-student interpersonal relationship comprises an important component of the professional identity of a teacher, particularly in the first phase of the career. In this phase, teachers face many dilemmas and problems that pertain to developing a good relationship with students (Volkmann & Anderson, 1998).

We take the position that not only the contextual or professional dimension but also the personal dimension of learning to teach is important. Developing the interpersonal component of professional identity as a teacher implies finding a balance between the teacher as a person and the teacher as a professional. It is impossible to separate the person from the professional (Lipka & Brinhaupt, 1999). The interaction between both is a dynamic and very complex process for beginning teachers, because of the impact of a range of practices, influences, and experiences on this process.

A focus on the development of the interpersonal component of professional identity of teachers helps to understand the complexity of becoming a teacher. Fact is that in teacher education and induction programmes, methods courses and field experiences are so concentrated on assisting beginning teachers to understand pedagogical theories and put them into practice, but that little attention is given to constructing a knowledge base grounded on their own personal ways of knowing (Pinnegar, 2005).

Teachers’ self-perceptions and perceptions that others have of them

Beginning teachers’ images of themselves as teachers often conflict with the reality of what makes a professional teacher and with the images and expectations that others have of them (Volkmann, & Anderson, 1998). Research findings on (student) teacher ideals, their self-perceptions and their students’ perceptions of them (Brekelmans, Wubbels, & van Tartwijk, 2005) confirms that beginning teachers are perceived much lower in terms of interpersonal influence than they would like to be (according to their ideal perceptions). Significant differences in perceptions have also been found between teachers’ self-perceptions and their students’ perceptions. These differences seem to extend to teaching behaviours such as teaching for active learning and clarity (den Brok, Bergen & Brekelmans, 2006). Moreover, differences between students’ and teachers’ perceptions remain during the teaching career, they are particularly large during the beginning teaching period which appears to be a major source of disappointment for many beginning teachers, and thus hindering their learning (Wubbels et al., 2006). On the one hand, beginning teachers would like to be perceived as ‘tough’, but at the same time are perceived as submissive (by their students). On the other hand, they hardly differ with their students when it comes to affiliation. These findings might be explained by, for example, knowledge and expectations regarding leadership roles, but also by identification processes with adults as well as with students. However, the precise nature of differences between teachers’ self-images and the images that others have of them and the (experience or knowledge) sources that (beginning) teachers have/use to construct these perceptions have hardly been investigated.

Prior experience/knowledge and personal theories on teaching

Beginning teachers’ lay theories about teaching and learning, based on prior experiences as a student, strongly influence how they see themselves as teachers. These theories usually are tacit and unarticulated in nature (Sugrue, 1997). From an interpersonal perspective it seems that many beginning and student teachers confuse teacher influence with teacher strictness, whereas many experienced teachers show leadership to be dominant, rather than strictness (Holvast, Wubbels, & Brekelmans, 1993). It might be possible that according to beginning teachers, both interpersonal dimensions of influence and affiliation are linked, while in the view of experienced teachers (and theory), these are independent. However, practical theories and knowledge of student teachers with
professional efficacy is the tendency to evaluate and interpret experiences. These experiences can lead to the establishment of a teacher identity. Establishing such an association between identity and experience can help close the gap between obvious manifestations of burnout and the stressors that students experience in the classroom. In his research, Lewis (2005) defined appraisal as the evaluation of resources and alternative responses that are available (coping). In other words, appraisal comprises a set of cognitive processes (perception, evaluation, attention, memory, reflection, and planning) that are directed towards what is important for the self. According to Lazarus and Folkman (1984), a person appraises a situation by evaluating the environment in terms of what is demanded and what personal resources are available. Lewis (1999) argues that with respect to the interpersonal competence, this appraisal concerns the gap that exists between discipline procedures utilized by a teacher and his/her idea of best practice. When teachers experience a discipline ‘stressor’ (situation) they have a primary and secondary appraisal. The first appraisal is directed at what in the situation is seen as challenging (or threatening), the second involves an estimation of resources and alternative responses that are available (coping). In his research, he found three mental models of discipline to be competing in teachers’ appraisal of a situation: control, group management, and influence. In the control model, teachers choose to control students’ behaviour at school and determine a clear set of rules and procedures to apply to students; in the group management model teachers manage their classroom by organizing students to make their own decisions within a group context, with the teacher as one of the group members; in the influence model, teachers influence each student so that he or she decides to behave well, and they allow students to experience the natural consequences of their behaviour so that they can choose to modify the way in which they behave. In his research, the control model appeared to be the most common in teachers’ appraisals of the situation. However, his research did not take into account teacher experience or expertise, nor did it study developments in teachers’ appraisals over time. While teacher appraisal has been linked to stress, coping, and burnout, Lewis (1999) has not been linked to components of teacher identity. Establishing such an association would be promising, since both elements seem to reside on mental (personal) models and both emphasize the importance of direction to the self.

**Work characteristics and quality of the career**

To study work characteristics and career quality we make use of the Job Demands-Resources (JD-R) model, a model that relates job performance and burnout to work engagement to work characteristics (Bakker & Demerouti, 2007).

**Burnout and work engagement**

Burnout is defined as a three-dimensional syndrome of exhaustion, cynicism towards work, and reduced professional efficacy, which occurs among individuals in their work environment (Maslach, Jackson, & Leiter, 1996 in Maslach, Schaufeli, & Leiter, 2001). Exhaustion, the most obvious manifestation of burnout refers to energy depletion and is characterized by severe physical, mental, and emotional fatigue. Cynicism is an attempt to distance oneself from the job, by actively developing negative attitudes towards it. Lack of professional efficacy is the tendency to evaluate one’s work negatively. Work engagement is considered as the positive antipode of burnout, and is defined as a fulfilling state of mind in employees that is characterized by vigor, dedication, and absorption (Schaufeli, Bakker, & Salanova, 2006). Vigor refers to high levels of energy and resilience while working, the willingness and ability to invest effort in one’s job, and persistence in the face of difficulties. Dedication refers to a strong involvement in one’s work, accompanied by feelings of enthusiasm and significance, and by a sense of pride and inspiration. Absorption refers to a pleasant state of total concentration on
one’s work which is characterized by time passing quickly and being unable to detach from the job.

**The JD-R model**

The main premise of the JD-R model is that, although every occupation has its own specific work characteristics, these work characteristics can be classified in two general categories, i.e. job demands and job resources. These characteristics initiate two fairly independent processes that explain (un)well-being. **Job demands** refer to those physical, psychological, social or organizational aspects of the job that require sustained physical and/or mental effort, and are therefore associated with certain physiological and/or psychological costs (e.g. work pressure, role ambiguity, poor environmental conditions). **Job resources** refer to those physical, psychological, social or organizational aspects of the job that may do any of the following: (a) are functional in achieving work goals; (b) reduce job demands and the associated physiological and/or psychological costs; (c) stimulate personal growth, learning, and development.

Job resources are necessary to deal with job demands, but they are also important in their own right, as they play a crucial motivating role (Bakker & Demerouti, 2007). Job resources may be located at the organizational level (e.g., pay, opportunities for professional development), at the interpersonal level (e.g., social support, team climate), at the level of the organization of work (e.g., role clarity) and at the task level (e.g., autonomy, feedback). Initially the model was applied to predict negative well-being, namely burnout (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

Over the years the JD-R model has been extended to a more comprehensive approach that does not restrict itself to employee’s malfunctioning (i.e. burnout) but also includes work engagement (Schaufeli & Bakker, 2004). Research on this expanded version of the model suggests that job demands are the most important antecedents of exhaustion whereas job resources are the most important antecedents of work (dis)engagement. The buffer hypothesis of the JD-R model claims that several different job resources may act as moderators in the relationship between several different job demands and burnout and work engagement.

**Personal factors**

We will select a limited set of personal factors to include in the research project. From the personal lives of teachers we make an inventory of circumstances concerning family support and demand (pregnancy, child rearing) and health issues (Day et al., 2006), personality (BIG 5 personality dimensions) and more associated with the teacher job we will include self efficacy, orientation towards innovation, and professional development history.

**Personality**

In line with Erdle, Murray, and Rushton (1985) we presuppose that teacher behaviour is influenced by personality traits of the teacher; Erdle et al. established that 50% of the relationship between teacher personality and student ratings are mediated by specific classroom behaviour. Extraversion seems to be the most viable indicator of effective teaching (Cano-Garcia, Padilla-Munoz, & Carrasco-Ortiz, 2005; Murray, Rushton & Paunonen, 1990). Murray, Rushton, and Paunonen (1990) found that extraversion and liberalism are good indicators for teachers that perform excellent in different teaching settings. Leadership and flexibility (liberalism) have been associated with general teacher effectiveness before (see for example Berliner, 1976). Poor teachers seem to have low extraversion and elevated neuroticism scores. Further, high neuroticism and introversion are related to teacher burnout, and also seem to be related to teachers that do not value interpersonal relationships with students (Cano-Garcia et al., 2005).

**Teacher self-efficacy**

Teacher self-efficacy may be defined as a teacher’s perceived ability to effectively instruct students and regulate their learning activities (Gibson & Dembo, 1984; Tschannen-Moran & Woolfolk-Hoy, 2001). Bandura (1993) argued that teachers’ self-efficacy has a strong effect on the kind of classroom environments teachers create. Teachers high in self-efficacy spend more time on academic learning, provide more help for students, and give more praise for accomplishments (Gibson & Dembo, 1984); all of these aspects of teacher behaviour have been associated to favorable teacher class relationships and student accomplishment (Wubbels et al., 2006). Further, low efficacy teachers seem to use more extrinsic incen-
Orientation towards innovation

Orientation towards innovation refers to teachers’ internalized responsibility for the improvement of education, continuing professional development, and a “we can do it” kind of attitude (Bryk & Scheider, 2002). It can be regarded as an indication for adaptive expertise.

Design

In this research project, interpersonal competence concepts (macro-social level: interpersonal component of professional identity, teacher knowledge, behavioural repertoire; micro-social level: teacher-student behaviour, scripts, appraisal) are related to career quality indicators (burnout, work engagement, attrition plans), personal (self-efficacy, personality, personal life, motivation in face of innovations) and work characteristics (job resources and job demands). In Figure 2 we have depicted the relationships between these variables.

The research project includes three part (PhD) projects. Three universities (Eindhoven, Leiden, Utrecht,) will participate, bringing together expertise on respectively teacher professional identity, teacher practical knowledge, and teacher behavioural repertoire. To facilitate collaboration and exchange between the participants in the interlinked research project, the research teams for each of the part project will be composed of researchers from different participating universities. The project will be organized as a joint enterprise of all participants. The participants of the three projects work together in answering all research questions (see below). However each part project has a focus on one of the components of teacher interpersonal competence:

1. attitude component
2. knowledge component
3. behavioural component.

With respect to the development of concepts, instruments and data analysis, responsibility is distributed across the projects: the attitude component will be elaborated in the first project, the knowledge component will be developed in the second, the be-
havioural component in the third project. Data collection will be organized as a joint activity. By exchanging data between the three projects, sufficient numbers of teachers can be sampled for each of the different phases of the teaching career with respect to each of the concepts. At the same time, the specific projects allow for focus in data analysis. Research output (including article publications) will be divided between the projects, in such a manner that the conceptual emphasis will be recognisable. Articles studying the integration of the competence components will be written by combinations of participants of different projects.

Underneath we first describe an outline for the overall design in this interlinked project proposal. The specific concepts and operationalisations will be described in the next section.

Research questions

To study our research problem two clusters of research questions will be answered, the first cluster being conditional for interpretation of the results for the second cluster:

1a. What is the relationship between level of interpersonal competence and interpersonal competence components (attitude, knowledge, behavioural repertoire at micro-social and macro-social level)?

1b. Are there differences in stability of teacher interpersonal competence within different phases of the teaching career?

2a. How does teacher interpersonal competence differ in different phases of the teaching career?

2b. What is the relationship between teacher interpersonal competence and quality of the teaching career in different phases of the teaching career?

2c. What is the relationship between teacher interpersonal competence and personal and organizational factors in different phases of the teaching career.

Sample

Given the time constraints of this research project (maximum of five years) a longitudinal study can cover a maximum period of three consecutive years. Although a longitudinal study of a first year teacher cohort is methodologically most “cleanest” (Singer & Willett, 1996) we value a broader coverage of the teacher career. We therefore plan a stratified sample of three groups of teachers in key-periods of the teaching career: beginning teachers (data collection starting in the first three years of the teaching career), mid career teachers (data collection starting in the 8th year of the teaching career) and late career teachers (data collection starting after the 20th year of the teaching career). Aiming at analysis of actual data whenever possible we try to avoid retrospective data collection, which is fraught with problems like memory failure and telescoping (Singer & Willett, 1996). With data gathering during three consecutive years will we be able to realize three year waves within three career-periods. Because of the complexity of the constructs addressed in the research questions we will adopt a mixed-method approach, involving a range of research techniques (Tashakorri and Teddlie, 2003). Selection of the above mentioned phases of the teaching careers is based on the following arguments:

- **a. 1-3 years**
  Veenman (1984) concluded that creating positive teacher-student relationships is the first concern of most student- and beginning teachers. Today still, research findings consistently show that student teachers and beginning teachers regard this as their most serious challenge (Evertson & Weinstein, 2006).

- **b. 8-10 years**
  According to Berliner (2001) a reasonable estimate for expert performance to develop in teaching, if it ever does, appears to be 5 or more. Other studies suggest similar periods, for example 7 years if student achievement is the criterion (Lopez, 1995 in Berliner 2001), 10 years when expert performance is the criterion (10 years rule Ericsson, 2006), 8-15 years if balance between work and personal life is the criterion (Day et al., 2006), and at least 6 years if healthy teacher-student relationships are the criterion (our own longitudinal research, see Figure 1).

- **c. more than twenty years**
  According to VITAE (Day et al., 2006) after fifteen years challenges to (sustaining) motivation become more prominent, especially in the face of
external policies and initiatives. Dealing with pupil behaviour becomes a core struggle for teachers. According to our own longitudinal research on teacher-student relationships after about fifteen years there is a decreasing tendency in affiliation in the teacher-student relationship (see Figure 1).

For each of the three career phases 36 teachers will be sampled. Given that voluntary participation is unavoidable, we make every effort to realize samples comparable regarding gender and subject taught. We will select 3 beginning, 3 mid career, and 3 late career teachers from a total of 12 schools. Both more ‘traditional’ and more ‘innovative’ schools will be included for reasons of heterogeneity in organizational factors.

We will try to recruit the mid- and late career sample as much as possible from the over 6000 teachers from more than 200 schools that are part of the archive of our study on the development of teacher-student relationship during the teaching career (Brekelmans et al., 2005). This archive contains data on students’ perceptions on the teacher-student relationship in different years of their teaching career. For selected sub samples data are also available on several work characteristics. Including teachers in the study who started 8-20 years ago with their teaching career makes it possible to position the career-part that we will describe with our study in the whole of the teaching career of these teachers.

Instrumentation

Level of interpersonal competence

Student perceptions of teacher-students interpersonal relationship will be used as an indication of the level of teacher interpersonal competence. To conceptualise students’ perceptions of the interpersonal relationship with their teachers, Wubbels, Créton, and Hooymayers (1985) created the Model for Interpersonal Teacher Behaviour (MITB). In the MITB, (a pattern in) the interpersonal behaviour of a teacher is described along two dimensions - an Influence dimension and an Affiliation dimension. The Influence dimension (Dominance vs Submission) describes the degree of control of the teacher over the communication process, the Affiliation dimension (Cooperation versus Opposition) the degree of cooperation or opposition between the teacher and the students. The two dimensions can be depicted in a two-dimensional plane that can be further subdivided into eight categories or sectors of behaviour: Leadership (DC), Helpful/Friendly (CD), Understanding (CS), Student Freedom (SC), Uncertain (SO), Dissatisfied (OS), Admonishing (OD) and Strictness (DO). Each sector can be described in terms of the two dimensions: Leadership, for example, contains a high degree of Influence and some degree of Cooperation; Helpful/Friendly behaviour some degree of Influence and a high degree of Cooperation. Wubbels, Créton, and Hooymayers (1985) also developed an instrument to measure students’ perceptions of their teacher’s interpersonal style in terms of the MITB, the Questionnaire on Teacher Interaction (QTI). The Questionnaire on Teacher Interaction (QTI) was constructed as a set of 77 Likert-type items that are answered on a five-point response scale describing teacher interpersonal behaviour in terms of the eight scales or sectors of the MITB, thus representing the two (interpersonal) dimensions.

The QTI has strong construct and predictive validity in well over 120 studies in more than 30 different countries. This research showed that students’ perceptions are related to, for instance, the classroom working climate, and students’ motivation and learning outcomes (Wubbels, Brekelmans, et al., 2006).

Interpersonal component of teacher professional identity

In order to make a valid judgement of the interpersonal component of teachers’ professional identity and to assess how this component should be valued against other components of this identity (in order to establish its relative importance), professional identity will be measured comprehensively. Teachers’ professional identity will be studied by conducting an in-depth interview with teachers and having them completing a semi-structured questionnaire. In the questionnaire, teachers will be asked open-ended questions with respect to several topics regarding identity (formation) and specific elements of this identity, such as personal and contextual facts, interpersonal self-perceptions and (interpersonal) images of self-as-teacher, dilemmas in the interaction between person and context and strategies followed to overcome these dilemmas, factors hindering or stimulating self image (see Beijaard, et al., 2004).
Following Day et al. (2006), teachers will be provided with several possible factors (from different domains) important for identity formation (e.g. birth or pregnancy, family relationships, support, professional development activities, etc.), and they will be asked to relate these factors to identity (development) components reported in the questionnaire. As part of the questionnaire, teachers will also be asked to create a (short) curriculum vitae, with specific attention for their interpersonal competence, both within and outside education (see Day et al., 2006). The questionnaire will be followed by an in-depth interview further detailing some topics of the questionnaire and extending some of the factors and events mentioned in the survey.

To construct an image of the interpersonal component of professional identity of teachers and the development of this component, several analysis steps will be conducted. First, an identity portrait (Day et al., 2006) will be constructed for every teacher at each data collection measurement. This portrait contains an overall summary of the themes found to be of importance in the questionnaire and interview. Within the portrait, specific attention will be paid to the relative importance of the teacher-student interpersonal relationship and the characterisation or nature of this relationship as part of the identity. The portrait will be constructed based on categories that have emerged from the data (grounded theory approach). Validity and reliability of the portraits will be established by having a second researcher coding parts of the data and establishing inter-rater reliability and by conducting a member check (presenting the portrait to the teacher). Second, to describe the development of teachers’ professional identity, the identity scenario approach by Day et al. (2006) appears to be a promising method. They distinguished four identity scenarios based on changes in identity portraits (relative importance of domains) and the factors affecting identity at a number of measurements: one domain dominates, balance between domains, two domains dominate, conflict between domains. Each of the teachers in their project was assigned to one of the emerging scenarios.

Appraisals

To study teachers’ situational appraisals, video-stimulated interviews will be conducted. In these interviews, teachers will be asked to describe their thoughts, feelings, perceptions, evaluations and reactions with respect to selected lesson fragments (that have been video-taped). These fragments will pertain to the lesson start, a lesson disturbance by a student and positive student behaviour. The interviews will be audio-taped and transcribed. The transcribed interviews will be coded, using a grounded theory approach. In constructing categories, the (coping) strategies suggested by Lewis (1999) can be a good starting point, as well as his distinction between mental models aimed at control, group management and influence.

Reliability of coding of the appraisals will be established by having a second researcher coding parts of the data and by establishing inter-rater agreement. Patterns in appraisals at and between measurements can be established by looking at frequencies of codes, related to particular situations, variance in appraisals within and between situations as well as between and within measurements.

Teacher interpersonal knowledge

Teacher interpersonal knowledge at the macro-social level

In Woolfolk-Hoy and Weinstein’s review (2006), three categories of experience are presented as sources of teacher knowledge: personal experiences, experiences with schooling, and experiences with formal knowledge. To elicit data about teachers’ interpersonal knowledge at the macro-social level, interviews will be conducted with the teachers. The interview in year 1 of the data collection will have different character than the interview in year 2 and 3.

Year 1

In the first part of the interview, teachers will be asked to describe these three types of experiences in relation to teacher-students interaction. During this part of the interview, an assistant will make a list of conclusions that can be distilled from these experiences. Subsequently, the teacher will be asked to check this list for completeness and add anything missing. The teacher will also be asked to comment on the relative importance of each of these conclusions.

Year 2

The list of conclusions from year 1 are the starting point of the interview. The teacher will be asked to
comment on the conclusions, describe new experiences and add new insights that have consequences for the list.

Year 3
Identical as in year 2, but with the list from year 2 as the starting point.

Teacher interpersonal knowledge at the micro-social level: scripts
In September 2007 a research project started at the ICLOON - Leiden University Graduate School of Teaching. In this project, a routine is developed for gathering data about script (as part of relational schemas) that teachers have about teacher-student interactions in specific situations in the classroom.

In this procedure, teachers are asked to watch brief video-fragments of teacher-students interactions in three specific classroom situations (e.g. the lesson start, a lesson disturbance by a student, and positive student behaviour). While watching these fragments, teachers are asked to verbalize their thought about the teacher-students interaction. At key-moments in the interactions, the researcher stops the videotape and asks the teacher to predict what will happen next and why they expect this.

Teacher interpersonal behaviour
Macro-level: Student perceptions of patterns in teacher interpersonal behaviour
The Questionnaire on Teacher Interaction (Wubbels, Crétom, and Hooymans, 1985) will be used to gather data on students’ perceptions of patterns in their teacher’s interpersonal behaviour. This instrument is also used to determine the level of teacher interpersonal competence.

Micro-level: Interpersonal behavioural repertoire
Because direct observations are the only means by which real time behavioural dynamics can be captured, we will make use of observational methods to be able to describe interpersonal behavioural repertoire in both micro- and macrolevel scales. Research on the micro- and macrolevel scales has however remained largely unintegrated (Granic & Paterson, 2006). A new DS methodology is State Space Grid analysis (SSG, Lewis, Lamey, & Douglas, 1999). SSG analysis is a graphical and statistical approach that uses observational data and quantifies these data according to two ordinal variables that define the state space for any individual system. The dyad’s trajectory (i.e. the sequence of behavioural states) is plotted as it proceeds in real time on a grid representing all possible behavioural combinations (Granic, Hollenstein, Dishion, & Patterson, 2003). A state space is a hypothetical landscape of behavioural habits that have stabilized over time.

As a SSG for studying micro-social behaviour of teachers and a class of students we will use two SSGs one representing Independence with five categories (from dependent to independent) and another representing Warmth (from empathetic to unfeeling/hostile). The teachers’ coded behaviour is represented on the x-axis, the students’ behaviour is represented on the y-axis. Each point on the grid represents a two-event sequence (a dyadic state).

For both SSG’s 25 combinations of teacher and class behaviour are possible. When specific combinations of behaviour are far more common than others during a specific situation these can be designated as a specific attractor. For example a sequence of behaviour where teacher behaviour is coded as independent, followed by class behaviour scored as dependent can be labelled as high Teacher Influence, a sequence with dependent teacher behaviour and independent class behaviour as low Teacher Influence.

For example a sequence of behaviour where hostile student behaviour is followed by teacher behaviour coded as empathic can be labelled as high permisiveness or proximity, mutually hostile behaviour as negative reciprocation. Three specific situations in the classroom will be investigated (see also proposal part project 1 and 2): the start of the lesson; coping with disorderly student behaviour; and reacting to positive student behaviour. We see these situations as situations that will occur in every normal lesson, while also suited for triggering a broad range of interpersonal behaviours, knowledge, and attitudes. To characterize patterns specific measures will be derived from the grids. Granic and Peterson (2006) give an example of a rigidity measure in terms of (a) transitions: the number of movements between cells on the grid (a lower value indicated less frequent changes of dyadic behavioural states and therefore more rigidity) and (b) average mean duration (AMD): each cells mean duration as calculated by dividing the total duration in that cell by the number of different times the dyad occupied that cell (the average of
these values across the whole grid was the AMD-value. High AMD values indicated a more rigid dyad that tended to remain in each state for an extended period of time. The z-scores for these measures were combined into one overall rigidity construct. After the content of the interaction was controlled for, rigidity still turned out to be a unique predictor of behaviour. The ability to transition from one task to another and to experience a broad array of states shows a sensitivity to contextual/environmental demands and an ability to regulate these states as context shifts.

Personal factors

Family support, health issues and professional development history
At the start of the data collection sessions of the interlinked research project a questionnaire will be completed by the participating teachers. The development of this questionnaire will be informed by the literature, and build on the instruments that were used in the VITEA project (Day et al., 2006).

Personality
The five personality dimensions Extraversion, Agreeableness, Conscientiousness, Emotional Stability and Openness to Experience will be measured using a shortened version of the Dutch version of the Big Five questionnaire (Gerris, Kwaaitaal-Roosen, Shipper, Vermulst, & Janssens, 1998). The questionnaire contains 30 items like ‘talkactive’ (Extraversion) or ‘nervous’ (Emotional Stability), which have to be judged by the teachers on the degree the item applied to themselves. Teachers score the items on a seven-point scale, ranging from absolutely agree to absolutely disagree.

Teacher self efficacy.
We will use a Dutch translation of Tschannen-Moran and Woolfolk-Hoy’s (2001) 12 item short version of the Ohio State teacher Efficacy Scale for the measurement of teacher efficacy (Mainhard, Brekelmans, Wubbels, & den Brok, in press). Items are for example ‘To what extent can you craft good questions for students’ (Instruction sub-scale), ‘How much can you do to calm a student who is disruptive or noisy?’ (Management sub-scale), or ‘How much can you do to get students believe they can do well in schoolwork’ (Engagement sub-scale).

Orientation towards innovation
Orientation towards innovation can be measured using a 6 item questionnaire developed by Bryk and Schneider (2002). This instrument has also been adapted and translated for use in the Dutch context (Verbiest, 2002).

Work characteristics and Career Quality
We want to explore how teachers in different phases of their career differ in work engagement and burnout and how this is related to (the development of) teacher interpersonal competence. Tatar and Horenczyk (2003) discuss a host of literature linking teacher stress to student misbehaviour, such as noisy behaviour, impoliteness, poor attitudes, discipline problems, lack of motivation, apathy and low achievement, all of which are strongly affected by teacher interpersonal behaviour (Wubbels, Brekelmans, den Brok, P., & van Tartwijk, 2006). Some studies have investigated links between teacher-student interpersonal behaviour and career quality indicators such as teacher satisfaction and well-being. Research by Brekelmans (1989) suggests that higher self-perceptions of teacher influence and proximity are associated with higher teacher satisfaction. Research on the well-being of teachers shows that teachers perceived high on Influence and Proximity have feelings of high well-being, while teachers perceived low on Influence and Proximity have feelings of low well-being (Van Petegem, Creemers, Rossel, & Aelterman, 2005). Based on Xanthopoulou (2007) three specific job demands will be included in this research project: workload, emotional demands, and student harassment, and four specific job resources: autonomy, social support, performance feedback, and opportunities for professional development. As career quality indicators burnout, work engagement, and teacher attrition risk will be included.

Job demands
Workload will be measured with the Dutch version (Furda, 1995) of Karasek’s (1985) Job Content instrument. The scale includes five items that refer to quantitative job demands (e.g., time pressure and hard work). A sample item is “My work requires working very hard”. Items are scored on a four-point scale ranging from (1) “never” to (4) “always”. Emotional demands will be assessed with the five-item scale of Bakker, Demerouti, Taris, Schaufeli, and
Schreurs (2003). An example is “Do you face emotionally charged situations in your work?” (1=never, 5=always). Student harassment will be measured with an adapted Dutch version of Mechanics’s (1970) scale. The scale will contain seven items, which describe different types of student misbehaviour (such as: “a student physically threatens another student”). Teachers will be asked to indicate the frequency of student misbehaviour on a five-point scale (1=never, 5=always).

Job resources

Autonomy will be assessed with the Dutch version (Furda, 1995) of Karasek’s (1985) Job Content instrument. The scale consists of nine items, such as “I can decide myself how I execute my work”. Items are scored on a four-point scale (1=never, 4=always). Social support will be measured with Van Veldhoven and Meijman’s (1994) ten-item scale. An example item is “Can you ask your colleagues for help if necessary?” (1=never, 5=always). Performance feedback will be measured with a three-item scale (Bakker et al., 2003), rated on a five-point scale (never-always). An example item is “I received sufficient information about the results of my work”. Opportunities for professional development will be assessed with a seven-item scale (Bakker et al., 2003), rated on a five point scale (totally disagree–totally agree). An example item is “My work offers me the opportunity to learn new things”.

Burnout

Burnout will be measured with the Dutch version (Schaufeli & Van Dierendonck, 2000) of the Maslach Burnout Inventory-General Survey (Schaufeli, Leiter, Maslach, & Jackson, 1996). Exhaustion will be assessed with five items. An example item is: “I feel emotionally drained from my work”. Cynicism will be assessed with four items. An example item is: “I have become less enthusiastic about my work”, and professional efficacy is assessed with six items, for example: “I can effectively solve the problems that arise in my work. All items are rated on a seven-point scale (never-every day).

Work engagement

Work engagement will be assessed with the short, nine-item version of the Utrecht Work Engagement Scale (UWES; Schaufeli, Bakker, & Salanova, 2006), with three dimension: Vigor (e.g. “At my work, I feel bursting with energy”), Dedication (e.g. “My job inspires me”), and Absorption (e.g. “I get carried away when I am working”), each three items scored on a seven-point scale (never-always).

Attrition risk

To get insight into teacher attrition risk we will construct a scale of about five items.

Analysis

Both qualitative and quantitative analyses will be conducted.

Quantitative analyses will involve structural equation modelling to analyse relationships between concepts, correlations to study ratings of the same teacher across the three years of the research project to obtain insight into covariance stability (stability of individual differences over time), and (multivariate) analyses of variance to compare teachers in different phases of the teaching career. For testing the reliability and construct validity of the data we will use internal consistency and factor analyses.

Qualitative analyses will include the creation of coding schemes (with Atlas-ti), organisation of data into case matrices (Miles & Huberman, 1994) and Homogeneity Analysis (HOMALS) to determine relations between categories. For testing the reliability and validity of the data we will use methods such as member checks, and inter-rater reliability.

Data collection

In each of the three consecutive years of the research project data will be gathered in November and February/March. Data collection in November will be organized around institutional meetings to which teachers will be invited. These meetings (in the afternoon/evening) will be organized by the three institutes jointly and data will be collected for each project at the same time. In these meetings, data will be collected concerning professional identity, practical knowledge, personal factors, and work characteristics. In February/March the researchers will visit the teachers at their school, make video registrations of all lessons (at least 5) on a specific day and conduct video-stimulated interviews and interviews with school leaders. Data on students’ perceptions of teacher student relationships will also be collected in...
this period. Whenever possible we will use the archive of our longitudinal research as a reference.

**Planning**

**Detailed description of the workplan for the first twelve months**

<table>
<thead>
<tr>
<th>Months</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2009 – September 2010</td>
<td>Participation in ICO (research school) courses: introduction course, master classes, etc.</td>
</tr>
<tr>
<td>September 2009 – December 2009</td>
<td>Theoretical orientation</td>
</tr>
<tr>
<td>November 2009 – February 2010</td>
<td>Instrument development</td>
</tr>
<tr>
<td>February 2010 – April 2010</td>
<td>Piloting instruments</td>
</tr>
<tr>
<td>February 2010 - June 2010</td>
<td>Contacting schools/teachers for participation, preparing study sample</td>
</tr>
<tr>
<td>April 2010 – May 2010</td>
<td>Construction of framework for analysis</td>
</tr>
<tr>
<td>April 2010 – May 2010</td>
<td>Piloting measurement round integral project and partial projects (measurement of work and personal factors, professional identity, attrition chance, burnout, satisfaction).</td>
</tr>
<tr>
<td>May 2010 – June 2010</td>
<td>Piloting video-taping of lessons and video-stimulated interviews first round integral project (behaviour, appraisals, scripts), QTI data collection</td>
</tr>
<tr>
<td>June 2010– July 2010</td>
<td>Piloting framework for analysis</td>
</tr>
</tbody>
</table>

**Global description of the workplan for the remaining duration of the project**

<table>
<thead>
<tr>
<th>Months</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2010 – September 2011</td>
<td>Participation in ICO (research school) courses: master classes, Summer school, Toogdag, etc.</td>
</tr>
<tr>
<td>Sept-Oct 2010</td>
<td>Data analysis pilot (continued)</td>
</tr>
<tr>
<td>November 2010</td>
<td>First measurement round integral research project and partial projects (measurement of work and personal factors, professional identity, attrition chance, burnout, satisfaction).</td>
</tr>
<tr>
<td>Jan-Dec 2011</td>
<td>Data analysis</td>
</tr>
</tbody>
</table>

**Dissemination**

The project will result in three dissertations based on (at least) four international peer-reviewed journal articles. These articles will be written around the following topics:

1. The development throughout the professional career of:
   - (project 1) (the interpersonal element of) professional identity
   - (project 2) teacher knowledge about teacher-students interaction
   - (project 3) teacher interpersonal behavioural repertoire

2. Work characteristics and
   - (project 1) (the interpersonal element of) professional identity
   - (project 2) teacher knowledge about teacher-students interaction
   - (project 3) teacher interpersonal behavioural repertoire

3. The quality of the teaching career and
   - (project 1) (the interpersonal component of) professional identity
4. Relations between teacher knowledge, behavioural repertoire and the professional identity as part of teachers’ interpersonal competence in different phases of the teaching career

Conference presentations will be held yearly at a national educational research conference (ORD), and at least two international conference presentations will be held, one at a European (ECER, EARLI) and one at another conference (ISATT, AERA, ICSEI).

Significance of the project

The topic of this research proposal is linked to the PROO programme, in particular Competence development of educational personnel, in a number of ways. The project investigates teacher career development by conducting longitudinal research on competence development and focuses on beginning, mid and late career teachers. Moreover, the study investigates cognition and behaviour and their interrelations systematically and longitudinally. It investigates teachers’ interpersonal competencies in relation to attrition, stress, burn-out and engagement, thereby suggesting possible clues for the reduction of teacher shortages as well as providing an empirical foundation for teacher attrition in the Netherlands.

By mapping mechanisms of how competencies, personal and organizational factors affect attrition, stress, and burn-out, the outcomes of the proposed research may contribute to the prevention of stress and attrition. Moreover, the mapping of behavioural repertoire and knowledge can provide clues for the design of teacher education and in-service professional development trajectories, and for planning and implementation of educational innovations adapted to specific phases of the teaching career. Finally, the instruments used in the study can help teachers (and schools) in the (self)diagnosis of stress, burn-out, or performance of teachers and validate approaches.

International orientation

In the project, international literature from the domains of teacher career development, expert performance, teacher-student interpersonal behaviour, relational schemas, professional identity, attrition, stress and burn-out will be used.

The research group closely cooperates and regularly publishes with a number of foreign institutes; contacts can be used for exchange of information, expert consultation and/or work visits by PhD students. With respect to research on professional identity and career development, this concerns the University of Nottingham, with respect to teacher-student interpersonal behaviour George Mason University (Fairfax, US), Curtin University of Technology (Perth, Australia), with respect to teacher professional development the universities of Edinburgh, Oxford and Durham (UK) and the universities of Helsinki and Turku (Finland), with respect to expert knowledge University of California (Berkeley, US) and Arizona State University (Phoenix, US).

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