Teachers' perspectives on self-regulated learning : an exploratory study in secondary and university education

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Teachers' Perspectives on Self-Regulated Learning

An exploratory study in secondary and university education

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This research was carried out in the context of the *Dutch Interuniversity Center for Educational Research*

Title: Teachers' Perspectives on Self-regulated Learning; An exploratory study in secondary and university education
Titel: Perspectieven van docenten op zelfstandig leren; een exploratief onderzoek in het voortgezet en wetenschappelijk onderwijs

Leiden University

ISBN: 10: 90-9021086-5
ISBN-13: 978-90-9021086-5

Print: Steinhoeve Media, Haastrecht
Cover Design: Marlies van Dolderen & Willy Mooren
Layout: Maaike Marchand

Teachers' Perspectives on Self-Regulated Learning

Proefschrift

ter verkrijging van

de graad van Doctor aan de Universiteit Leiden,

op gezag van de Rector Magnificus Dr. D.D. Breimer,

hoogleraar in de faculteit der Wiskunde en

Natuurwetenschappen en die der Geneeskunde,

volgens besluit van het College voor Promoties

te verdedigen op donderdag 9 november 2006

klokke 13.45 uur

door

Helena Wilhelmina Oolbekkink-Marchand

geboren te Waddinxveen

in 1976

Promotiecommissie

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Voor mijn mannen

Hans en Sem

Table of Contents

List of Tables

List of Figures

1

Introduction

1.1 Context of the study

One important reason for the introduction of self-regulated learning in secondary education in the Netherlands was the problematic transition of students from secondary to higher education. Many first-year students change studies or leave university altogether. Furthermore, teachers in higher education complained about students who possessed insufficient study skills; for example, students were not sufficiently prepared to study new learning material independently (Stuurgroep Profiel Tweede Fase Voortgezet Onderwijs, 1993). Studies in other countries revealed similar problems of transition (see for instance Zeegers and Martin, 2001). To our knowledge, studies on the problems of transition have only been conducted at specific universities in the Netherlands. Taconis and Holleman (1998) investigated the transition from secondary education to university at Utrecht University. One of the things they concluded was that students have starting problems because there is a discrepancy between the repertoire students have at the end of secondary education, which consists of components like prior knowledge, subject specific skills, general skills, and attitude, and the repertoire universities expect students to have in their first year.

The innovations in upper secondary education consisted of two components; the 'Tweede Fase' ('Second Phase') which brought about changes in the curriculum, and the 'Studiehuis' ('Learning House'), which stimulated schools to use a new didactic approach, focused more on self-regulation of learners. The curriculum of several school subjects was changed, new school subjects were introduced, and learners could choose a specific combination of subjects (instead of a free choice from all examination subjects). Furthermore, teachers were encouraged to stimulate self-regulated learning for students, which requires students to gradually take control of their own learning process. Teachers, therefore, had to change their approach towards learners who had to become responsible for their own learning process. The teacher had to become a guide of the learning process, while remaining an expert in his or her specific school subject.

Since the changes in secondary education towards self-regulated learning aimed to improve students' transition to higher education, it is important to know how teachers on both sides of the 'divide' think about self-regulated learning. One would expect that university teachers, who generally demand more independence of their students, would have views which comply with the concept of self-regulated learning. Considering the fact that there are various views on independence in secondary education, it is the question to what extent secondary teachers' ideas are in line with the ideas of teachers in higher education. In this

study we will investigate the views of both teachers in secondary and university education on self-regulated learning and we will compare the results.

We know from the literature that teachers' views influence their behavior in everyday practice (Pajares, 1992). The outcome of the present study may improve our understanding of the problematic transition of students from secondary education to university. If teachers' perspectives are not in line with the ideas underlying an innovation, the changes suggested will probably not be put into practice.

1.2 Studies on the role and position of teachers in secondary education in the context of innovations

Several studies have been conducted on the role and position of teachers in the Netherlands, in connection with the recent educational innovations in secondary education. Some studies investigated how teachers' roles in their particular school subject had changed. In a study by Henze, Van Driel and Verloop (2005), the development of teachers' practical knowledge of a new school subject, Public Understanding of Science ('ANW'), was studied. Results indicated, amongst other things, that the development of practical knowledge is characterized by a clarification or elaboration of vague or implicit ideas about teaching the subject of Public Understanding of Science. In a study still in progress, Platteel, Hulshof, and Van Driel (2005) investigate teachers of the school subject Dutch language, who are developing 'context-content' education in an action research setting. In this study the focus will be on the practical knowledge teachers need in order to connect concepts of the school subjects, like text sorts, to changing contexts, and on the development of this knowledge over time. In both projects the focus is on teachers of a specific school subject and (the development of) their practical knowledge in the context of the recent innovations.

In other studies, the teacher's role in an innovative context, in general was studied. For example, the emotions of teachers related to the innovations in secondary education in the Netherlands were studied by Van Veen (2003) whose study revealed that teachers experienced positive emotions when their orientations towards work could be characterized as progressive (that is learner-oriented), and, therefore, was congruent with the innovations. On the other hand, teachers experienced negative emotions when their orientations towards work were characterized as traditional (that is content-oriented), and, therefore, was incongruent with the innovations. In a large-scaled project, still in progress, Bakkenes, Hoekstra, Meirink, and Zwart (2004) investigate teachers' ways of learning in the context of active and self-regulated learning from different angles: from a 'context of collaboration', a 'coaching-setting', and from the context of an 'informal learning environment'. In this study, the researchers develop a conceptual model in order to study and explain teachers' learning in practice. In another study, De Kock (2003) investigated the types of choices secondary teachers make when arranging learning environments in the context of the recent innovations. This study indicated that teachers make choices based on the

following aspects of both the 'traditional' and the 'new' learning environments, namely: the division of teacher and learner roles, learning goals, and learning materials. In a study by Bolhuis (2001), teachers' conceptions on self-regulated learning were studied and how these beliefs relate to teachers' behavior. This study indicated that most teachers have a process-oriented view on teaching, which implies, for instance, that teachers find the active construction of knowledge by learners important. Furthermore, no clear relation was found between conceptions of learning and teachers' behavior in the classroom. These studies were focused on teachers' conceptions, and behavior in relation to the educational innovation in secondary education.

All these studies focus on teachers in secondary education; no study took teachers in higher education into account. Since the educational innovations aimed to improve the transition to higher education, we want to fill this gap by conducting a study which involves both teachers in secondary and in higher education to see if the beliefs both groups have about self-regulated learning are in line with each other. In other words, we want to find out if teachers in both groups have similar beliefs about self-regulated learning.

1.3 Background

1.3.1 Self-regulated learning

Both in secondary and higher education, the development of self-regulated learning has received much attention (Pintrich, 2004; Rasku-Puttonen, Eteläpelto, Arvaja, & Häkkinen, 2003; Van Velzen, 2002; Zeegers & Martin, 2001). Zimmerman and Schunk (2001), in their book on self-regulated learning and academic achievement, formulate a general definition of the concept of self-regulated learning that all theorists would agree on, although they place a different emphasis on, for instance, the role of motivation or the role of the social and physical environment. Schunk and Zimmerman define self-regulated learning as follows: "the degree to which students are metacognitively, motivationally and behaviorally active participants in their own learning process (Zimmerman, 1989, p.4)". The definition is similar to Höfer, Yu and Pintrich's idea about the commonality between different models of self-regulated learning: "There are different models of self-regulation but all have in common the basic assumption that students can actively regulate their cognition, motivation, or behavior and, through these various regulatory processes, achieve their goals and perform better (Hofer et al., 1998)."

There are a number of similarities between definitions from different theoretical perspectives about self-regulated learning, one of which is that students are assumed to be aware of the potential usefulness of self-regulatory processes in enhancing their academic achievement. Zimmerman and Schunk (2001) offer a description of how and why students choose to use a particular self-regulated process, strategy or response. In their description, the learner plays a decisive role in self-regulated learning, as he or she is the one who actively construes knowledge, and is ultimately responsible for the learning process.

Learners can learn to regulate their learning process by choosing strategies to study a certain topic or complete an assignment, by reflecting on the use of strategies, and by monitoring the learning process. The question is how the teacher can guide learners in their learning process.

1.3.2 Process-oriented teaching

The role of the teacher in the process of self-regulated learning has received ample attention in the literature. Different models have been developed to stimulate the self-regulation skills of students, for instance, those of Vermunt and Verschaffel (2000), Boekaerts and Simons (1995), and Zimmerman, Bonner and Kovach (1996), amongst others. These models are also referred to as 'process-oriented teaching' models, stressing the "processes of knowledge construction and utilization (Vermunt & Verloop, 1999, p. 265)".

Bolhuis (2001) has formulated a number of central issues which are important for process-oriented teaching. One important aspect is the focus on the gradual transfer of the regulation of thinking and learning processes away from the teacher to the student. It is important for the teacher to consider how the regulation should be transferred to the learners. Vermunt and Verschaffel (2000) point out that the interplay between self-regulated learning and externally regulated learning can lead to friction. Two types of friction are distinguished: constructive and destructive friction. Constructive friction encourages students to use learning and thinking strategies they have never used before, which consequently can also lead to an increase in the use of other strategies. Destructive friction occurs when a teacher expects too much from the self-regulatory strategies of students, or when the teacher takes over strategies the students already have mastered. In the different models, the person in control of the learning activities is of great importance.

Another important issue in models of process-oriented teaching is the centrality of thinking and acting in a domain-specific manner, and connecting knowledge and skills of a subject area to the manner in which these have to be learnt. It is therefore important that teachers combine a thorough knowledge of the discipline they are teaching with the learning skills that are necessary in order to learn the content. For example, a learner who has to study a difficult text and does not know how to go about it, can be assisted by the teacher who can provide clues as to how to break the text into components (Zimmerman et al., 1996). The teacher can provide, by thinking aloud, examples of strategies to study certain material. Other common aspects found in models of process oriented teaching concern the role of affective aspects (e.g., motivation), and the importance of learning as a social phenomenon (Bolhuis, 2001).

1.3.3 Teachers' perspectives on self-regulated learning;

We found two studies focusing specifically on teachers' conceptions on self-regulated learning in secondary education. One study by Waeytens, Lens, and Vandenberghe (2002) investigated teachers' conceptions about 'learning to learn', which is defined as a set of skills, including study skills, critical analysis, time management, planning, and the ability to set goals. Fifty-one teachers of

two subjects, Dutch language and mathematics, were interviewed. A qualitative analysis of the data showed that 71% of the teachers had a narrow view on learning to learn, and 29% had a broad view. Aspects of the broad and narrow views on learning to learn are presented in Table 1.1.

Table 1.1

Various aspects of the broad and narrow view on learning to learn (adapted from Waeytens, Lens & Vandenberghe, 2002, p. 310).

	Broad view	Narrow view
Function of learning to learn	Developmental function	Supportive function Remedial function
Task conception	Guiding students	Transmitting knowledge
Conception of the learning process	Learning: active process, Exploring	Learning: accumulation of facts
Conception of the students	Active	Passive
Instructional approach	Students are responsible for their learning activities	Teachers take over the learning activities

In another study by Bolhuis and Voeten (2004), the aim was to determine whether teachers' conceptions were in line with the process-oriented view of teaching in secondary education in the Netherlands. The questionnaire consisted of a number of two contradictory statements, one of which represented a process-oriented view, while the other offered a traditional view on learning. The items belonging to the traditional view on learning were characterized, amongst other things, by teacher regulation, knowledge as a (determined) set of facts, and learning as an individual process. The items representing a process-oriented view were characterized by learner regulation, knowledge as active construction by the learner, and learning as a social process. The teachers were asked to rate on a four-point scale which of the two items they most agreed on. The results of this study indicate that teachers in secondary education, on average, preferred a process-oriented view on learning to a traditional view.

We did not find studies which specifically investigated university teachers' perspectives on self-regulated learning. Teachers' perspectives on teaching have been investigated extensively in higher education (see also Dunkin & Precians, 1992; Van Driel, Verloop, Van Werven, & Dekkers, 1997; Kember & Kwan, 2000; Samuelowicz & Bain, 2001). Kember (1997) tried to 'reconceptualize' the research into university teachers' conceptions of teaching. He proposed a multiple categorization model of conceptions of teaching, in which two broad orientations are distinguished: teacher-centered / content-oriented and student-

centered / learning-oriented (see also Figure 1.1). Under each orientation two conceptions are placed which are, under the teacher-centered / content orientation, imparting information and transmitting structured knowledge. Under the student-centered / learning orientations are two conceptions which are labeled facilitating understanding and conceptual change / intellectual development. Moreover, there is another intermediate conception which falls under neither one of the orientations and can be characterized as student-teacher interaction / apprenticeship.

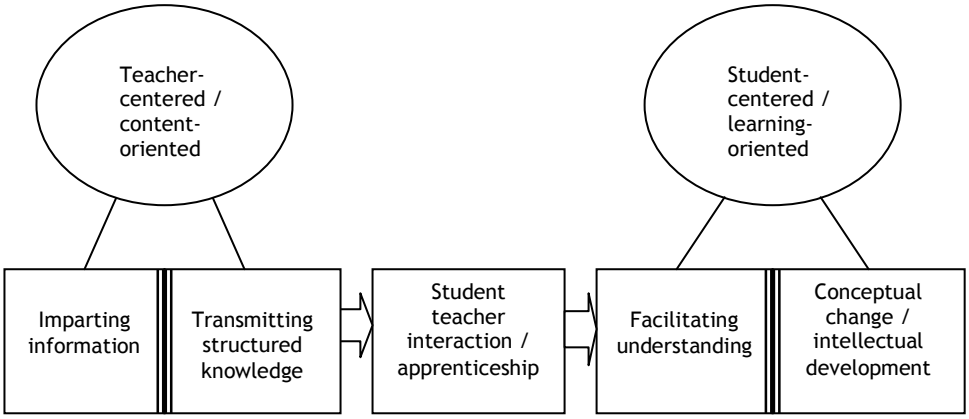

Figure 1.1

A multiple-level categorization model of conceptions of teaching (adapted from Kember, 1997, p. 264).

Kember indicates that there are different views on the relationship between the categories: some see the categories as qualitatively different, while others suggest that the categories can be placed on a continuum with different positions, whereas still others perceive the categories as a 'developmental sequence'.

1.3.4 Teachers' perspectives

In the research literature, the nature of teachers' beliefs has particularly been the subject of debate. In his review, Pajares (1992) synthesized what is known about the nature of teachers' beliefs or conceptions from research. These research findings can be used as "fundamental assumptions when initiating a study on teachers' educational beliefs" (Pajares, 1992, p. 324). An important aspect of the nature of beliefs is their adaptive function, which allows individuals to understand and define themselves and the world around them. Beliefs function as a filter which influences how we interpret phenomena and how these affect our everyday behavior (Pajares, 1992; Pratt, 1992).

In the research literature, it is assumed that teachers' beliefs are difficult to measure because they cannot be assessed directly (Kagan, 1990). Beliefs are often held unconsciously or teachers cannot find the right language to describe them, or they are reluctant to reveal them for personal or social reasons. Moreover, beliefs are connected to a specific context. The problems associated

with measuring beliefs have caused researchers to use methods which access beliefs indirectly (Kagan, 1990; Rokeach, 1968).

In this study, we adhere to the following definition of Pratt, who defined perspectives as being: "Specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world (Pratt, 1992, p. 204)." According to Pratt, perspectives consist of intentions, beliefs, and (*perceived*) actions. These three components of perspectives are interdependent. When applied to teachers, intentions refer to what a teacher is trying to accomplish. Actions refer to the way a person teaches, according to him or herself. And finally, beliefs refer to why actions and intentions are considered to be important, reasonable, and justifiable.

As far as beliefs are considered, specifically, we assume that some beliefs are more central and others more peripheral (Green, 1971; Pajares, 1992; Rokeach, 1968). Beliefs about, for instance, learning and knowledge can be characterized as core beliefs and are interconnected with other, more peripheral, beliefs such as beliefs about composition of groups of learners in the classroom. Core beliefs are considered less open to change than peripheral beliefs.

In this study we want to describe teachers' perspectives on self-regulated learning, and compare the perspectives of both secondary and university teachers. The following research questions are central to this study:

- *What perspectives do teachers in secondary and higher education have on self-regulated learning?*
- *What are the similarities and differences between teachers' perspectives on self-regulated learning in secondary education and in higher education?*
- *What is the relation between teachers' perspectives and the discipline they teach?*

1.4 Relevance

In this study, we will use Pratt's model (1992, 1998), which he used as a framework in his study of teachers in adult and higher education. In our study we will use his model to investigate teachers' perspectives on self-regulated learning. Our study can support the model if we can find the same interconnectedness of intentions, beliefs, and actions, although this time related not to teaching but to self-regulated learning.

One of the aims of our study is to contribute to the knowledge of teachers' perspectives on self-regulated learning. We aimed to investigate the variety of

teachers' perspectives. Previous studies in secondary and higher education have shown that there are a limited number of perspectives on this phenomenon (Marton and Booth, 1997). For instance, in previous studies on teachers' perspectives on teaching and learning two to seven different views were found.

Furthermore, although a comparison of the results of studies on teachers' perspectives in secondary and higher education has been made, to date these perspectives have yet to be investigated simultaneously in one empirical study (Boulton-Lewis, Smith, McCrindle, Burnett, & Campbell, 2001). This omission has been noted by several authors, including Entwistle and Walker (2000) and Menges and Austin (2001). Several reasons can be given for the lack of studies on both secondary and university teachers. Often, large differences are suggested between the contexts teachers work in, as well as the different goals they strive towards. The primary focus of university teachers is on research rather than teaching. Then there are also the different ways of preparing for teaching, the different roles and responsibilities of teachers, and their different target groups (Menges & Austin, 2001; Kember, 1997).

The results of this study are also of interest to teacher educators and trainers. It can help them to understand how teachers' work is influenced by their own perspectives, because "If people want to understand and influence teaching, they must go beneath the surface to consider the intentions and beliefs underlying behavior" (Pratt, 1998, p.11). If we understand the different beliefs and intentions that underlie the teaching practice, we can use this knowledge to improve the professional training and development of teachers by tapping into these beliefs and helping teachers improve their teaching practice by focusing on their own intentions, and beliefs.

1.5 Outline

In Chapters 2 and 3 we describe a small-scale study in which we explored the variety in teachers' perspectives on self-regulated learning, and compare the two groups of teachers concerning these perspectives. Semi-structured interviews were used to investigate the variety of teachers' perspectives. These interviews were held with 37 teachers from various schools (in secondary education), and from various universities (in higher education). The teachers taught in a variety of disciplines. During the interviews teachers were asked questions concerning their ideas about teaching and learning, and they were asked to respond to a number of metaphors about teaching and learning, with the assumption that this would help teachers explicate their views. In Chapter 2, we describe a number of categories representing the variety of teachers' perspectives. Patterns in these categories were described as representing four qualitatively different perspectives. In Chapter 3, we compare secondary and university teachers based on the categories we found in Chapter 2. The result of this study is a description and discussion of the main similarities and differences between the two groups of teachers.

In Chapters 4 and 5, we describe a large-scale study in secondary and university education in which we investigate teachers' perspectives using the variation we

found in the interviews as input for our survey study. The sample involved secondary teachers from different schools and different subjects, and university teachers from one university. More specifically, in Chapter 4, we describe the main similarities and differences between secondary and university teachers. In Chapter 5, we provide a description of three perspectives we found in our sample, and we investigate whether or not there are any differences between teachers teaching 'hard' disciplines (e.g., mathematics) and 'soft' disciplines (e.g., language), and these teachers' perspectives on self-regulated learning.

In Chapter 6, we present a general conclusion and discussion, based on the findings described in the previous chapters.

2

Using metaphors to study the variety in teachers' perspectives[1]

Abstract

We explored secondary and university teachers' perspectives on self-regulated learning. Semi-structured interviews (n=36) with both secondary and university teachers were conducted. A qualitative analysis was employed in which matrices were used to look for patterns within persons. The results indicated four perspectives: 1) meaning oriented-loose regulation, 2) meaning oriented-strong regulation, 3) knowledge oriented- loose regulation, and 4) knowledge oriented-strong regulation. Both secondary and higher education teachers were found to be present in all perspectives. The findings from this study were compared to those from other studies, and possible explanations were given for finding perspectives 2 and 3, which differ from the perspectives found in the literature.

[1] Manuscript published in revised form as:
Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2006). Secondary and university teachers' perspectives on self-regulated learning. In F. Oser, F. Achtenhagen, & U. Renold (Eds.), *Competence oriented teacher training: Old research demands and new pathways* (pp. 219-236). Rotterdam: Sense Publishers.

2.1 Introduction

Changing demands in higher education have been one important reason for recent educational innovations in Dutch secondary education. Higher education requires students with an inquiring and reflective attitude and the necessary skills for lifelong learning (Simons, Van der Linden, & Duffy, 2000; Veugelers & Zijlstra, 2001). Universities have high dropout rates, especially in the first year of study. Students starting in their first year at university often experience difficulties because they lack study skills and attitudes (Taconis & Holleman, 1998). This has been one of the reasons for the innovations in secondary education towards self-regulated learning. The assumption underlying this innovation is that students are better prepared for university if they have learned to plan, control, and monitor their own learning, i.e., if they are "meta-cognitively, motivationally, and behaviorally active participants in their own learning process" (Zimmerman & Schunk, 2001).

These changes in secondary education have implications for the role of the teacher who, in addition to focusing on the subject matter, needs to concentrate on the learning process of the students, and on teaching skills to help students regulate their learning. In the literature, this focus on the students' learning process is sometimes referred to as process-oriented teaching (Bolhuis & Voeten, 2004). The emphasis in this way of teaching is on a gradual transfer of control over thinking and learning processes from the teacher to the student (Vermunt & Verschaffel, 2000).

In the literature, the importance of teachers' thoughts and actions is emphasized in the case of the implementation of an educational innovation (Fullan, 1991; Verloop, Van Driel, & Meijer, 2001). If teachers' perspectives are not in line with the ideas underlying an innovation, the changes suggested will probably not be put into practice. For this innovation to be successful, it is of crucial importance to know what the teachers' perspectives on self-regulated learning are. As this innovation concerns the relation between (upper) secondary and higher education, we aimed in this study to investigate both secondary and university teachers' perspectives. The identification of both similarities and differences between these teachers' perspectives is important for the implementation of the innovation, for example, to design professional development activities for teachers. Knowledge about teachers' perspectives and actions can help us to understand and improve teaching practice and ultimately influence student learning (Campbell, Smith, Boulton-Lewis, Brownlee, Burnett, Carrington, & Purdie, 2001; Kember, 1997; Marton & Booth, 1997).

2.2 Research into teachers' perspectives in secondary and higher education

In the literature up till now, few researchers have focused on teachers' perspectives on self-regulated learning. We found two studies with a somewhat

different aim, but both were concerned with self-regulated learning2. Waeytens, Lens, and Vandenberghe (2002) investigated teachers' perspectives on "learning to learn", which is related to self-regulated learning. The authors consider learning to learn to be a set of skills involving study skills, critical analysis, time management, planning, goal setting, etc. In Waeytens et al.'s study, the starting point was taken in Hounsell's work (1979), who distinguished between a broad and a narrow conception of learning to learn. In the narrow conception, learning to learn is perceived as developing study skills, strategies, and techniques. In the broad conception, the focus is on developing higher-order cognitive skills. According to Waeytens, the two conceptions differ in various aspects. In the narrow vision on learning to learn, the function of learning to learn is supportive and remedial, the task conception of the teacher is transmitting knowledge, the learning process is conceived of as an accumulation of facts, the student is passive, and the instructional approach is controlled by the teacher. In the broad vision, on the other hand, the function of learning to learn is developmental, the task conception of the teacher is guiding and goading students, the learning process is seen as an active process, the students are active, and the students are responsible for the learning activities. In this study, 51 secondary teachers of two subjects (the Dutch language and mathematics) were interviewed and a qualitative analysis was carried out, after which teachers were ascribed to one of the conceptions: 71% narrow and 29% broad.

In the Netherlands, a study by Bolhuis and Voeten (2004) was conducted with the aim of seeing if secondary teachers' conceptions of learning were in agreement with a process-oriented view on teaching and learning. This view is based on research and theories on student learning processes and the interplay between self-regulation and external regulation of learning. It refers to recent ideas about teaching and learning, such as self-regulation, active learning, social learning, and knowledge construction. As a basis for the design of a questionnaire to measure teachers' conceptions of student learning and teachers' own learning, five conceptions from the literature on learning were used: self-regulation of learning, learning as active construction of knowledge, the social nature of learning, a dynamic view of intelligence, and tolerance of uncertainty. Tolerance of uncertainty determines the way a learner is motivated to learn from new situations which are in conflict with what the learner knows. Each item in the questionnaire consisted of two opposing statements, one representing a process-oriented view and one a more traditional view. The teachers were asked to indicate on a four point scale with which of the statements they most agreed. Items representing a traditional view were characterized by teacher regulation, knowledge as a given set of facts, learning as an individual process, a static conception of intelligence, and a low tolerance for uncertainty. Items representing a process-oriented view were characterized by learner regulation, knowledge as actively constructed by the learner, learning as a social process, a dynamic conception of intelligence, and high tolerance for uncertainty. The

[2] We searched for studies mainly in the Social Sciences Citation Index and Eric, using entries like beliefs, conceptions, and perspectives in combination with learning, self-regulated learning, active learning, and independent learning.

results of this study indicate that teachers on average preferred the process-oriented view to the traditional view.

We did not find studies concerned specifically with teachers' perspectives on self-regulated learning in higher education. Therefore, we broadened our scope and looked for studies of university teachers' perspectives on learning and teaching. Many studies can be found in the literature focusing on teachers' perspectives on teaching. Similar to the study by Waeytens et al. (2002), in most studies, one dimension, which is seen as a continuum, is found on which all teachers' conceptions are arranged. For instance, Kember (1997) reviewed 13 studies in higher education in which teachers' conceptions of teaching were investigated. The two orientations Kember distinguished are called teacher-centered/content-oriented and student-centered/learning-oriented. These orientations were further divided into five conceptions: (1) imparting information, (2) transmitting structured knowledge, (3) student-teacher interaction, (4) facilitating understanding, and (5) conceptual change.

A similar dimension described by Kember for higher education can also be found in studies in secondary education (Aguirre, Haggery, & Linder; Boulton-Lewis, Smith, McCrindle, Burnett, & Campbell, 2001; Gao & Watkins, 2002; Koballa, Graber, Coleman, & Kemp, 2000), and also in the aforementioned studies by Bolhuis and Voeten (2004) and Waeytens et al. (2002). Both a traditional (Bolhuis & Voeten, 2004) and a narrow conception (Waeytens et al., 2002) are similar to Kember's teacher-centered/content-oriented. The process-oriented (Bolhuis & Voeten, 2004) and the broad conception (Waeytens et al., 2002) can be characterized in Kember's terms as student-centered/learning-oriented.

2.3 The nature of teachers' perspectives

As mentioned, in the previous section, different terms are used in the literature to describe teachers' perspectives: views, conceptions, beliefs, and other terms can be found (Fox, 1983; Boulton-lewis, Smith, McCrindle, Burnett, & Campbell, 2001; Prosser, Trigwell, & Taylor, 1994). Pajares (1992) refers to teachers' beliefs as a 'messy construct' mainly because the distinction between beliefs and knowledge is problematic. In this study, we took as a starting point Pratt's work (1992, 1998), who defined perspectives as: "Specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world (Pratt, 1992, p. 204)."

Perspectives and conceptions are used as identical terms by Pratt. According to this author, perspectives consist of an 'inter-related set' of intentions, beliefs and (perceived) actions (Pratt, 1992). Intentions refer to what a teacher aims to accomplish, and beliefs refer to why intentions and actions are considered to be important, reasonable, and justifiable. Actions refer to teachers' behavior as perceived by the teacher him or herself.

Perspectives, and beliefs as a part of perspectives, can be seen as a system with central and peripheral parts (Green, 1971; Pajares, 1992; Rokeach, 1968). There are beliefs which are held strongly and are not in question, so-called core beliefs, and there are other, more peripheral, beliefs. Some beliefs are more central to one's being than others because they are rooted in values, and therefore, are less open to change (Pratt, 1992; 1998). The degree of centrality depends, furthermore, on the connectedness: the more a belief is functionally connected to other (central and peripheral) beliefs, the more the (central) belief will resist change (e.g., Rokeach, 1968). Central beliefs relate to the way we see ourselves and the world around us.

These central beliefs function as an arbiter who determines which actions, intentions, and even peripheral beliefs are acceptable (Pratt, 1992, p.208). These central beliefs are about learning, knowledge, and assessment (epistemic beliefs); they are 'at the heart of a perspective' (Pratt, 1998, p.208). Other beliefs are more peripheral and refer to the things we prefer or find useful in a particular situation. These beliefs are more open to change.

Owing to the organization of beliefs and the assumption that they are often implicit (Pajares, 1992), beliefs are considered difficult to measure. In the literature, many suggestions have been put forward to overcome this problem, like using multi-method approaches (Kagan, 1990) and inferring beliefs from what people say, intend, and do (Rokeach, 1968). We decided to measure beliefs using metaphors as a stimulus for teachers to help them explicate their beliefs (Fox, 1983; Ebbens, 1994). Metaphors are often described in the literature as a tool for teachers to express their beliefs (Bullough & Stokes, 1994; Gurney, 1995; Munby & Russell, 1990). We took existing metaphors as stimuli for teachers to react to in an interview. We used metaphors, firstly, because they are compact and they refer to a whole world of meaning in a few words. In the second place, metaphors facilitate the expression of something difficult and, in the third place, metaphors are vivid: a metaphor is closer to people's experience than a description of an experience (Ortony, 1975).

Our aim was in the present study to investigate secondary and university teachers' perspectives on teaching and learning, focusing on self-regulated learning. In the literature, up till now, secondary and university teachers' perspectives have been investigated separately (Kane, Sandretto, & Heath, 2002). We aimed to describe the qualitative variation in secondary and university teachers' perspectives. Considering the results found in several studies of teachers either in secondary or in higher education, we assumed that there would be similarities between secondary and university teachers. We realized, however, that there are important differences between the two groups of teachers, concerning their preparation for teaching, their research tasks in addition to teaching, the students they teach, and so on.

We aimed to answer the following research question:
What perspectives do teachers in upper secondary and higher education have on self-regulated learning?

2.4 Method

2.4.1 Sample

Semi-structured interviews were used in this study to collect data. These interviews were conducted with 16 teachers (11 male; 5 female) in upper secondary education (pre-university education)3 and 20 teachers at university (17 male; 3 female)4. The mean age of the upper secondary teachers was 45 years (ranging from 31 to 59 years) and that of the university teachers was also 45 years (ranging from 28 to 56 years). The average length of experience in education was 18 years in secondary education (ranging from 7 to 34 years) and 19 years in higher education (ranging from 4 to 35 years).

Given the purpose of the interview study (see above), we needed as much variation between the teachers as possible. For this reason, we selected different schools (n=5) and faculties (from 3 universities) and chose teachers who (1) taught different subjects and (2) had different amounts of experience in teaching. The teachers were contacted and the purpose of the study was explained. All the teachers who were contacted, except one, agreed to participate, and an appointment was made with them for an interview.

2.4.2 Instrument

The interview questions were tested in a pilot study in two rounds, together involving 6 teachers, from both upper secondary and higher education. In the first round, three interviews were held with the aim of finding out whether the interview questions were clear to the respondents and to find out if previously selected metaphors about teaching (see Table 2.1, part I) helped the respondents explicate their beliefs. In the second round, consisting also of three interviews, the main aim was to find out whether the previously selected metaphors about learning (see Table 2.1, part II) stimulated the teachers to explicate their beliefs about learning. These pilot interviews revealed that the metaphors indeed stimulated teachers to verbalize their ideas about student learning because it appeared that the metaphors could easily be agreed or disagreed with, and that teachers were able to explain why they agreed or disagreed with a metaphor. The final interview scheme consisted of two parts: (I) on teaching perspective and (II) on learning perspective (see Table 2.1).

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[3] The secondary teachers taught the following subjects: Chemistry (n=2), Physics (n=2), Mathematics (n=1), Dutch language (n=2), English language (n=2), German language (n=1), French language (n=1), Classics (n=1), History (n=1), Economics (n=2), Geography (n=1).

[4] The university teachers taught in the following disciplines: Chemistry (n=1), Physics (n=1), Mathematics (n=1), Biology (n=1), Medicine (n=2), Dutch language and literature(n=2), French language and literature (n=1), German language and literature (n=1), History (n=2), Economics (n=2), Architecture (n=2), Law (n=2), Psychology (n=1), Education (n=1).

Table 2.1

Interview Questions

Interview Part	Questions/Metaphors
I Teaching perspective	What does your ideal educational practice look like? Can you realize that ideal in practice?
	Please comment on each of the following metaphors: o It is the teachers' task to offer difficult material in sizeable pieces. o Teaching is like scattering seeds in the wind; the teacher cannot determine what happens with it. o Students are like raw material which has to be formed according to a predetermined pattern. o Teaching is like making connections between different parts of the subject matter. o It is the teachers' task to arrange a building site for students and to deliver the relevant material. o Education is like a journey through the landscape of the subject with the teacher as a guide to a group of students. o The teacher is like a gardener who gives every plant in his garden what it needs. Which metaphor do you prefer and why?
	Have your beliefs on teaching changed over the years? If so, can you indicate what has changed?
II Learning perspective	What is the students' role in your educational practice?
	What do you think is the best way for students to learn? Do you take students' learning into account in your educational practice? How?
	Do you motivate students to learn? If so, how do you do this?
	Please comment on each of the following metaphors: o Learning is like buying o Learning is like climbing a mountain. o Learning is like drinking o Learning is like organizing a hunt o Learning is like arranging a toolkit o Learning is like building o Learning is like storing data Which metaphor do you prefer and why?
	Have your beliefs on learning changed over the years? If so, can you indicate what has changed?

2.4.3 Procedure

The respondents were asked the interview questions shown in Table 2.1. The two sets of metaphors on teaching and learning were used as follows. The interviewer asked the teachers to read each metaphor aloud and give a reaction. The purpose of this open request was to give teachers the opportunity to react freely to all aspects of the metaphor. After the teachers had commented on all metaphors about teaching, they were asked to choose a metaphor on teaching they preferred, and to explain why. The same procedure was followed for the metaphors on learning.

All interviews took place at the schools or faculties where the teachers worked in the period April till July 2001, and from October till December 2001. The average duration of the interviews was approximately 60 minutes (ranging from 35 minutes to 120 minutes). All interviews were tape-recorded and transcribed verbatim. The transcripts were used for the analysis.

2.4.4 Analysis

A qualitative method of analysis was used to analyze the transcripts. The analysis was inspired by the phenomenographical method: the identification of 'themes' in the data (making use of 'decontextualized' quotes from the interviews) and the description of variation within each theme, which is referred to as 'categories of description' (Marton & Booth, 1997).

The analysis consisted of three phases: in phase 1, a description of themes and categories of description was made; in phase 2, the interrater reliability was established and in phase 3, patterns across the themes were identified, resulting in the identification of teachers' perspectives. In the first phase of the analysis, interviews with a small number of teachers were selected (n=5), clearly varying as regards the ideas about teaching and learning. Transcripts from interviews with both upper secondary and university teachers were used. The first and second authors read these interviews thoroughly to identify important themes. Themes were considered important if they pertained to teachers' perspectives on self-regulated learning. The researchers first identified themes separately, and then compared their findings. Next, the themes were discussed by the researchers to minimize any overlap there might be between them. All quotations belonging to a specific theme were read again to identify possible variation within each theme. For instance, within the theme 'learning process, some quotations were specifically about learning as accumulating knowledge whereas other quotations dealt with the structuring of knowledge. The various new aspects identified within each theme were called categories of description.

Finally, the authors defined the content of each category of description and added examples to clarify the categories. A category of description was assigned to a quotation when the quotation contained the elements mentioned in the description of the category. For example, the category 'development' (belonging to the theme 'goals') was described as "The goal of teaching is to stimulate students in order that the talents they have can be fully developed". The following is an example of a quotation this category was assigned to: "And I think that you should take care that what's in him / her (the learner) can all come out. That a learner gets his / her space". The first phase of the analysis continued until all diversity in the interviews seemed to be covered; in other words, until saturation occurred (Strauss & Corbin, 1990).

In the second phase, a research assistant was involved in the process of analysis to see if the themes and the categories of description could be assigned to quotations by a person not familiar with the data. Five interviews were coded by the first author and the research assistant using the set of categories of description generated in the first phase. The interrater reliability with two raters was .78 (Cohen's kappa) based on 38 interview fragments and 32 categories of

description (Eggen & Sanders, 1993). Categories of description were then assigned to all 36 interview transcripts using Atlas-ti, a software program for qualitative analysis (Muhr, 1997).

In the third phase, we searched for patterns in the categories of description assigned to the 36 interviews. We assumed that the theme 'learning process' in particular would distinguish between the teachers since, as discussed above, this theme can be regarded as a central belief (Pratt, 1998). Since we were specifically interested in self-regulated learning, we also investigated whether the theme 'regulation' would distinguish between teachers. In order to compare the teachers based on these themes, we used a conceptually ordered matrix (Miles & Huberman, 1994) in which both the teachers and the categories of description of the themes 'learning process' and 'regulation' were placed (informant-by-variable matrix). The matrix consisted of rows with the categories of description and columns with the teachers. The occurrence and the frequencies of the categories were documented in the matrix.

A comparison of the teachers based on the theme 'learning process' made it possible to divide the teachers into two groups. The category 'acquiring meaning' occurred in one group of teachers. These teachers also referred to other categories of description belonging to the theme learning (e.g., 'knowledge', 'apply', 'structure', and 'change'). The category 'acquiring meaning', however, was the category they all had in common. The category 'accumulation of knowledge' was found in the remaining group of teachers, who also referred to either the category 'apply' or the category 'structure' but never to 'acquiring meaning' or 'change'. Knowledge was the defining characteristic of this group.

A further comparison based on the theme 'regulation' revealed that these two groups could be split according to the category of regulation most frequently used; for one group, the teacher was mainly in control and, for the other group, the learners were in control. The patterns found in these four groups of teachers were called perspectives.

We added the other themes and categories to the matrix, which added extra characteristics but did not change the composition of the four groups. In the results section, we will elaborate on the characteristics of the perspectives we found.

2.5 Results

2.5.1 Codebook

As a result of the first phase of the qualitative analysis of the interviews, six themes were identified, each containing four to seven categories of description. A short description of each of these categories is given below.

Table 2.2
Codebook

Theme	Category of Description	Content
Goals (intention)	Knowledge	Goal is to increase students' knowledge and skills.
	Opinion	Goal is to have students form an opinion on the subject matter.
	Pedagogy	Goal is to teach students norms and values.
	Development	Goal is to stimulate students to develop the talents they have.
	Independence	Goal is to stimulate students to become independent thinkers.
Learning (belief)	Knowledge	Learning is increasing subject-matter knowledge.
	Apply	Learning is practicing/applying skills/ knowledge.
	Structure	Learning is making connections or seeking structure in the content.
	Meaning	Learning is understanding a subject and seeing/making connections with other subjects, your own life, or daily practice.
	Change	Learning is changing your perspective.
Characteristics of the learning process (belief)	Order	Learning is characterized by a certain order.
	Goal	Learning is characterized by goal-orientedness.
	Process	Learning is characterized as being continuous and never finished.
	Discovery	Learning is characterized as unexpected.
Students (belief)	Active-initiative	Students are expected to initiate learning activities themselves.
	Active-control	Students are expected to be active and work hard, guided by the teacher.
	Not working	Students are expected to be not involved, not motivated, and not hard-working.
	Capacity	Students are expected to be capable of performing tasks on their own.
	Diversity-group	Group differences are taken into account by the teacher.
	Diversity-individual	Individual differences are taken into account by the teacher.
Regulation (perceived action)	Teacher	Teacher has responsibility for (parts of) the learning process.
	Learner	Student has responsibility for (parts of) the learning process.
	Together	Both teacher and student have responsibility for (parts of) the learning process.
	Flexible	Teacher adapts his teaching to diverse groups.
	From teacher to student	Teacher gradually gives control over learning process to the students.

Table 2.2. *continued*

Instructional activities (perceived action)	Cognitive-convey	Task is to convey subject matter.
	Cognitive-explain	Task is to explain subject matter.
	Cognitive-structure	Task is to structure subject matter.
	Affective-social	Task is to stimulate social interaction.
	Affective-motivation	Task is to motivate students.
	Regulative-environment	Task is to create a favorable learning environment.
	Regulative-learning	Task is learning how to learn.

2.5.2 Description of four teacher perspectives on self-regulated learning

In Table 2.3, an overview is presented of the four perspectives; in each perspective the teachers' views on the themes 'learning', 'regulation', 'characteristics of learning' , 'students' , and 'goals' is represented.

Table 2.3

Snapshots of four teacher perspectives on self-regulated learning

	Perspective 1	Perspective 2	Perspective 3	Perspective 4
Learning	Learning is understanding a subject and seeing/ making connections with other subjects, your own life, or daily practice.	Learning is understanding a subject and seeing/making connections with other subjects, your own life, or daily practice.	Learning is increasing subject-matter knowledge.	Learning is increasing subject-matter knowledge.
Regulation	The student is mainly in control.	The teacher is mainly in control.	The student is mainly in control.	The teacher is mainly in control.
Characteristics of Learning	Learning is characterized as unexpected.	Learning is characterized by a certain order.	Learning is characterized by goal-orientedness.	Learning is characterized by goal-orientedness.
Students	Students are expected to initiate learning activities themselves.	Students are expected to be active and work hard, guided by the teacher.	Students are expected to be active and work hard, guided by the teacher.	Students are expected to be active and work hard, guided by the teacher Students are not involved, not motivated, and not hard-working.
Goals	Goal is to stimulate students to develop the talents they have. Goal is to stimulate students to become independent thinkers.	Goal is to stimulate students to become independent thinkers.	Goal is to teach students norms and values. Goal is to stimulate students to become independent thinkers.	Goal is to increase students' knowledge and skills.

The four perspectives of teachers are presented below in more elaborate descriptions illustrated with quotations (translated from the Dutch) which characterize the perspective.

Although each teacher was assigned to one of the perspectives, we emphasize that our descriptions of the perspectives are proto-typical and, therefore, do not apply exactly to all teachers. In other words, the uniqueness of individual teachers is not acknowledged in these descriptions. Each perspective is given a name referring to the dominant categories of description representative of each group. For the theme 'learning process', the perspectives are labeled with either 'meaning' or 'knowledge'. The theme regulation has two labels, either 'loose' or 'strong'. Loose regulation refers to mainly learner regulation, regulation by both teacher and learner, and flexible regulation. Strong regulation refers to mainly teacher regulation.

1. Meaning-oriented and Loose Regulation Perspective

A typical teacher in this perspective believes that learning is about developing understanding or giving meaning to the subject matter, and "translating it to your own life"(U4)[5]. The learning process is characterized by discovery of (unexpected) things, which makes learning an exciting undertaking.

Regulation in this perspective is mostly loose, and students are, often gradually, given more responsibility for their learning process: "It has to happen on the side of the students"(U19). Learner regulation is often found in combination with regulative activities like learning to learn. A typical teacher in this perspective expects students to take the initiative themselves, for instance, by collecting materials and judging their own learning results, but also by discovering what their best way of learning is.

In this perspective a typical teachers' main goal is the development of students both in subject-matter knowledge and personally: "Pupils must use the capacities they have to the full" (S17)[6]. Another important goal is independence, which stresses the responsibility students have to take for their own learning process and independent thinking about subjects within and outside the discipline.

2. Meaning-Oriented and Strong Regulation Perspective

Like in perspective I, a typical teacher in this perspective has the core belief that learning is about developing meaning of the subject matter and "connecting the subject matter to the experiences of pupils"(S7). The learning process, however, is characterized by order: learning (of a certain subject matter) takes place in a certain order, or step by step: "I indicate how it should be read, so start with the reader and one of the handbooks" (U8).

Regulation in this perspective is mainly in the hands of the teacher. Teacher control is often found in combination with cognitive activities, like conveying and structuring subject matter. The image of the teacher as a content

[5] The "U" at the end of each quote stands for University Teacher.
[6] The "S" at the end of each quote stands for Secondary Education Teacher

expert is important: "I feel like a guide because I can point out a lot of beautiful things in the landscape which they would have missed because they know too little"(S7). A typical teacher in this perspective expects students to be active and involved. Many teachers referred to the efforts students have to make and the importance of working hard.

A typical teacher in this perspective has independence of the learners as the main goal. Many teachers mentioned that students should grow to become more independent. Independence also has to do with a way of thinking students should acquire and the ability to deal with doubts and uncertainty.

3. Knowledge-oriented and Loose regulation Perspective

For a typical teacher in this perspective, learning is about acquiring knowledge and structuring that knowledge. This means that teachers want their students to make connections themselves, structure the subject matter, and order it for themselves: "All the information you acquire at school, all the skills you develop, that you group them in an orderly manner for yourself so you can retrieve knowledge, information skills, more or less blindfolded" (S10). The learning process is characterized by directedness at a goal; setting goals is important for learning.

Loose regulation is important in this perspective and is aimed at cognitive activities, like structuring subject matter, and at affective activities like motivating students. Students are expected to take the initiative themselves and to look, for instance, for additional study material in order to complete an assignment. Both secondary and university teachers in this perspective connect the students' initiative with searching and finding things out for themselves.

A typical teacher in this perspective has the education of students as a goal, which means teaching students norms and values and, specifically, respect for others: "You can only teach them norms and values or regard or respect for certain things" (S4). The aim of independence of students, like in perspectives 1 and 2, has to do with taking more responsibility and a way of thinking.

4. Knowledge-oriented and Strong regulation Perspective

For teachers in this perspective, learning is about gaining knowledge and using this knowledge. Having basic subject-matter knowledge or being able to find the necessary knowledge, is considered necessary by most teachers. In addition they think it important to make knowledge more 'productive' for students by having them practice, for instance, assignments and skills. According to these teachers, similar to the views of the teachers in perspective 3, the learning process is characterized by goal-directedness.

Regulation in this perspective is mainly in hands of the teacher and focuses on cognitive activities, like explaining and structuring subject matter for students, for example, by connecting different chapters in a book and providing different perspectives on the material: "You don't just make connections, you also present a lot of subject matter" (U14). Motivating students by, for instance, stressing the nice sides of the subject and creating a favorable learning environment is also important. A typical teacher in this perspective expects students to study subject matter actively. Teachers also referred to the negative

attitudes of students in the sense that they do not work hard (enough) and do not have the right priorities: “They spend little time in school because they know less and can’t follow classes; they are not involved, it doesn’t appeal to them, they get less enthusiastic” (S11).
A typical teacher in this perspective has the increase of students’ knowledge as a goal of his/her teaching.

In Table 2.4, an overview can be found of the characteristics of the teachers in each of the four perspectives. In each perspective teachers with different subjects can be found. There are differences between the perspectives in the division of males and females, for example there are no female teachers in the knowledge-loose perspective, and most female teachers have a meaning-loose perspective. The teachers in the meaning-loose, and knowledge-loose perspective are, on average, younger and have less experience than the teachers in the meaning-strong, and knowledge-strong perspective.

Table 2.4

Characteristics of teachers in the four perspectives

	Perspective 1 Meaning Oriented Loose Regulation	Perspective 2 Meaning Oriented Strong Regulation	Perspective 3 Knowledge Oriented Loose Regulation	Perspective 4 Knowledge Oriented Strong Regulation
Teachers	3 secondary 5 university teachers	2 secondary 5 university teachers	5 secondary 5 university teachers	6 secondary 5 university teachers
Subjects	German Language, Economy (2), Mathematics, Dutch Language(2), Medicine	Mathematics, History, Architecture (2), French Language, Physics, Classical Languages	Chemistry (2), English Literature (2), Law, History (2), Medicine, Dutch Language, Biology	Economy (2), Dutch Language, French Language, Geography, Physics (2), German Language, Law, Psychology, Chemistry
Mean Age	43	48	43	47
Mean experience	15	23	17	21
Sex	5 female 3 male	1 female 6 male	10 male	2 female 9 male

2.6 Conclusions and discussion

To answer our central research question, What perspectives do teachers in upper secondary and higher education have on self-regulated learning?, we identified, as a result of the analysis of the interviews, four perspectives: meaning-oriented and loose regulation, meaning-oriented and strong regulation, knowledge-oriented and loose regulation, and knowledge-oriented and strong regulation. It is remarkable that teachers from both secondary schools and university were found

in each perspective. Another finding was that the different disciplines taught by the teachers were represented in every perspective. Furthermore, teachers in the perspectives characterized by loose regulation were somewhat younger on average and less experienced on average than the teachers in the perspectives characterized by strong regulation (see also Table 5).

A comparison can be made between the outcomes of our study and the results obtained by Waeytens et al. (2002), who made a distinction between a narrow and a broad view on learning to learn. In Waeytens' broad view, many elements can be found which are similar to those in our 'meaning-loose' perspective (1): the elements of task conception, where learning to learn is important, and the learner as the one responsible for many learning activities, and the capability of students. The narrow view has many elements in common with our 'knowledge- strong' perspective (4): a task conception where transferring information is important and the teacher is the one in control of most instructional activities. Differences between these two studies concern the two additional perspectives we found. This may be a result of the analysis, in which we introduced 'regulation' as a part of our own framework to analyze teachers' perspectives.

In the study by Bolhuis and Voeten (2004), traditional and process-oriented conceptions were distinguished. Unlike these researchers, we did not find mainly process-oriented views, e.g., with the focus mainly on learner regulation and knowledge as actively constructed by the learner. The majority of the teachers in our study appeared to have a knowledge-oriented view and about half of the teachers saw regulation as the teachers' responsibility. Both these characteristics seem to fit better with a traditional conception than with a process-oriented view. This difference may be related to the instruments used to measure teachers' conceptions. In Bolhuis' study, a closed questionnaire was used in which every item consisted of two 'opposite' statements, whereas an open instrument was used in this study. Another explanation may be the different samples: in Bolhuis' study 260 secondary teachers were investigated while 36 secondary and university teachers were involved in our study.

In most studies of teachers' conceptions, one dimension is identified which ranges from knowledge transmission to student understanding/conceptual change. In our study, we found a similar dimension, which is reflected in the names of the 'knowledge-oriented' or 'meaning-oriented' perspectives. We also found an extra dimension, however, because we focused on perspectives on self-regulated learning. Different views of regulation appeared to lead to a further distinction between the knowledge-oriented and meaning-oriented groups. Strong and loose regulation both combined with knowledge-orientedness as well as with meaning-orientedness, resulting in four perspectives. Our findings seem to indicate that, unlike the view put forward in the literature, knowledge-orientedness and teacher-centeredness do not always go together; loose regulation in combination with an orientation to knowledge also appears to be possible. On the other hand, meaning-orientedness appears to exist in combination with strong regulation.

The perspectives identified in the present study can be characterized in terms of their content, or what intentions, beliefs, and actions are part of each perspective, as discussed above. Another way is to look at the organization of each perspective, or the internal consistency (Pajares, 1992): if there is a (theoretically) expected connection between intentions, beliefs, and (perceived) actions within a perspective, then the perspective is called consistent. For example, in perspective 1, a connection between intentions, beliefs, and actions as theoretically expected can be found, since teachers with this perspective believe learning is about developing understanding, and, consequently, students are given room to direct their own learning, either together with the teacher or alone. In contrast, in perspective 2, although learning is focused on developing meaning, it is the teacher who regulates students' cognitive activities. However, one would expect a stronger focus on student-regulated activities, and more room for the students to be able to develop meaning and translate insights they have gained by learning. Both this perspective (2; 'meaning- strong') and perspective 3 ('knowledge-loose') seem to be less consistent because beliefs, intentions, and actions are found in an unexpected combination. The character of belief systems in general may explain these combinations. A belief system consists of belief substructures which are not always connected to other belief substructures (Green, 1971; Pajares, 1992). As a result, unexpected combinations between belief elements or substructures may be created. Another explanation may be that these perspectives are 'in transition', like the intermediate conception in Kember's model (1997), which is thought to be a bridge to student-centeredness and conceptual change.

We emphasized in the introduction to this chapter that it is important for teachers' perspectives to be in line with educational innovations. Our findings seem to indicate that the meaning- oriented / loose regulation perspective connects best to the present ideas for innovation in Dutch secondary education. The meaning-oriented / strong regulation and knowledge- oriented / loose regulation perspectives both have some elements of this innovation, but the knowledge-oriented / strong regulation perspective is not in line with the innovation. This finding suggests that the implementation of self-regulated learning is problematic because a group of teachers is not convinced of its importance. One solution may be to invest in additional training for teachers, although the literature indicates that a change of perspectives is difficult to achieve (Pajares, 1992). Another possibility is to make teachers' perspectives the starting point for making adjustments to the innovation (Verloop, Van Driel, & Meijer, 2001).

On the basis of the results of this study, it is not possible to make a generalization to the whole population of Dutch secondary and university teachers, because our sample consisted of a small number of schools and various universities. A large-scale study is needed to investigate whether the four above-mentioned perspectives can be found in the whole of the population. Other aspects worth investigating are the influence of the subject matter taught, gender, the culture of the (research) group teachers belong to, and biographical factors on the

perspectives of both groups of teachers. It would also be worthwhile to investigate how these perspectives are related to teacher behavior in everyday practice, and how students perceive different teachers.

3

A breed apart? A comparison of secondary and university teachers' perspectives on self-regulated learning[7]

Abstract

Teachers' perspectives in secondary and higher education have been investigated separately up till now, probably owing to the differences expected between these two groups of teachers. In this study, similarities and differences between secondary and university teachers' perspectives on self-regulated learning were investigated using semi-structured interviews. The purpose of this study was to improve understanding of the problematic transition of students from secondary to higher education. Thirty-six secondary and university teachers from different disciplines were interviewed with the aim of describing the variety in their perspectives. Diverse metaphors about teaching and learning were presented to the teachers during the interviews with the assumption that this would encourage explication of beliefs. A qualitative analysis of the interview protocols resulted in a codebook with six themes, each containing up to seven categories of description of the variation within each theme. The themes found in the analysis were goals, learning, characteristics of the learning process, students, regulation, and instructional activities. All themes and most categories of description were found in both groups of teachers. The differences found could be related to a focus on either the learner or the content. University teachers tend to be focused more on the variety in content and secondary teachers more on the variety between students. The results of this study can make both secondary and higher education teachers aware of their own and other teachers' perspectives and the possible influence on students learning and adaptation in higher education, for instance in pre-service and in-service courses.

[7] Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2006). A Breed Apart? A comparison of secondary and university teachers' perspectives on self-regulated learning. *Teachers and Teaching: Theory and Practice, 12 (5),* 593-614.

3.1 Introduction

Many studies of teachers' perspectives on teaching and learning have been conducted, both in upper secondary education (Bolhuis & Voeten, 2004; Boulton-Lewis, Smith, McCrindle, Burnett, & Campbell 2001; Waeytens, Lens, & Vandenberghe 2002) and in higher education (Prosser, Trigwell, & Taylor, 1994; Samuelowicz & Bain, 1992; Van Driel, Verloop, Van Werven, & Dekkers, 1997). However in fewer than half of the studies on tertiary teachers discussed by Kane, Sandretto and Heath (2002) in their review on university teachers, reference was made to findings from research on teachers' perspectives in primary or secondary education. The literature on tertiary teachers' perspectives is probably referenced even less often in studies of primary and secondary teachers' perspectives. Research on teachers' perspectives in primary, secondary, and tertiary education seems to have its own literature. Moreover, no empirical study has yet been conducted to compare the perspectives of these groups of teachers systematically.

It is possible that the literatures on secondary and university teachers are not cross-referenced extensively because of the differences expected between secondary and university teachers. For instance, Kember (1997) claimed that university teachers consider themselves 'a breed apart' from school teachers. University teachers apparently consider themselves first and foremost not teachers but members of a certain discipline. Other possible differences between secondary and university teachers are the different ways of preparation for teaching, the contexts in which teachers work and the very different age, experience and development of the learners (see also Menges & Austin, 2001). The implication of these differences seems to be that teachers' perspectives in secondary and higher education are difficult to compare.

Although there may be many differences, Entwistle and Walker (2000) indicated that "while teaching in higher education is bound to have distinctive characteristics, it also has elements in common with more general ways of describing teaching" (p. 343). Boulton-Lewis et al. (2001) also suggested a commonality when they concluded from their research that the conceptions of school teachers they found were similar to those of university teachers found in previous research (Kember, 1997). Although the settings of both groups of teachers are different, they are both involved in a process of teaching and learning.

The present study focused on both secondary and university teachers. The study was undertaken in the context of educational innovations in upper secondary education in the Netherlands. These innovations aimed to improve students' transition from secondary to higher education. Like in other countries, universities in the Netherlands have high dropout rates especially in the first year of study (Lueddeke, 2003). Students starting in their first year at university often experience difficulties because they lack study skills and attitudes (Taconis & Holleman, 1998). One of the measures taken to overcome this problem was the introduction of self-regulated learning for pupils in upper secondary education. Self-regulated learning can be defined as "the degree that students are meta-

cognitively, motivationally and behaviorally active participants in their own learning process" (Schunk & Zimmerman, 1998). The assumption was that students are better prepared for studying at university if they have learned to control their own learning process, which means they are able to prepare for learning, monitor their learning process, and evaluate it (Zimmerman & Schunk, 2001). The teacher plays a crucial role in the successful implementation of self-regulated learning, because (s)he teaches students how to regulate their own learning process (Vermunt & Verschaffel, 2000)

In the ideal situation, secondary and university teachers' perspectives on self-regulated learning are complementary. The aim of this study, therefore was to investigate teachers' perspectives on self-regulated learning both in upper secondary and in higher education, to identify similarities and differences there are in the ways these teachers perceive self-regulated learning.

The following research question was addressed in this study:

What are the similarities and differences between upper secondary and university teachers' perspectives on self-regulated learning?

In this study both secondary and university teachers' perspectives were studied simultaneously. In literature both similarities and differences are suggested between these two groups but so far no empirical study has taken both groups of teachers into account. The outcome of this study can improve our understanding of the problematic transition of students from secondary education to university. We know from literature that teachers' perspectives influence their behavior in everyday practice (Pajares, 1992). In our study, we assume that students' high attrition rates in their first year of study may in part be caused by the different practices of teachers in secondary education and at university.

The results of this study are also of interest for practitioners who are concerned with the professional development of teachers. It can help them to understand how teachers work from their own perspective, because "If people want to understand and influence teaching, they must go beneath the surface to consider the intentions and beliefs underlying behavior" (Pratt, 1998, p.11). The beliefs and intentions which underlie teaching practice can be used to improve the professional preparation and development of teachers.

3.2 What are perspectives and how can they be measured?

Secondary and university teachers' perspectives on self-regulated learning were the object of this study. Pratt defined perspectives as
"Specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect,

we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world" (Pratt, 1992, p. 204).

According to Pratt, perspectives consist of intentions, beliefs, and actions. These three components of perspectives are 'interdependent'. Intentions refer to what a teacher is trying to accomplish, actions refer to the way a person teaches according to him or herself, and beliefs refer to why those actions are considered to be important, reasonable, and justifiable.

In the research literature, particularly the nature of teachers' beliefs has been the subject of debate. In his review, Pajares (1992) synthesized what is known about the nature of teachers' beliefs or conceptions from research. These research findings can be used as "fundamental assumptions when initiating a study on teachers' educational beliefs" (Pajares, 1992, p. 324). An important aspect of the nature of beliefs is their adaptive function, which makes individuals understand and define themselves and the world around them. Beliefs function as a filter which influences how we interpret phenomena and they affect our everyday behavior (Pajares, 1992; Pratt, 1992).

In the research literature, it is assumed that teachers' beliefs are difficult to measure because they cannot be assessed directly (Kagan, 1990). Beliefs are often held unconsciously or teachers have no language to describe the beliefs they hold, or they are reluctant to reveal their beliefs for personal or social reasons. Moreover, beliefs are connected with a specific context. These problems with measuring beliefs have caused researchers to use methods which access beliefs indirectly (Kagan, 1990). Rokeach claimed that beliefs can best be investigated indirectly by inferring teachers' beliefs from "all the things the believer says or does" (Rokeach, 1968, p.2).

In this study, the assumption was that beliefs can be elicited in interviews by asking respondents to react to metaphors selected by the researchers. In most other studies in which metaphors were used, teachers were asked to provide a metaphor themselves in response to a question in a questionnaire or during a teacher-training course. In both cases, the teachers had time to think about a metaphor (e.g., Bullough & Stokes, 1994; Gurney, 1995; Martinez, Sauleda & Huber 2001; Munby & Russell, 1990; Stofflett, 1996). However, we considered it too difficult for teachers to generate a personal metaphor during an interview because there is limited time to think about an appropriate metaphor.

A metaphor usually consists of two parts: the subject term and the metaphorical modifier. Most explanations of metaphor involve the relationship between these two terms, in which the subject term is the familiar and the metaphorical modifier the less familiar part (Lakoff and Johnson, 1980; Hulshof & Verloop, 2002). An example is 'The teacher is like a gardener who gives every plant in his garden what it needs'. In this metaphor, the teacher (subject term) is compared to a certain kind of gardener (metaphorical modifier), namely, one who gives every plant in his garden what it needs. A specific activity of the gardener is related to the teacher, which can shed new light on the teachers' activities. While the gardener's activity helps us to comprehend one aspect of the teacher's task, it hides other aspects of it. In other words, metaphors highlight as well as hide aspects of the concept.

Metaphors carry multiple meanings in one image, and they can help people express thoughts which are difficult to express otherwise (see also Campbell, 1975; Ortony, 1975; Rathod, 1982). Ortony (1975) proposed three 'theses' on compactness, inexpressibility, and vividness, to elaborate on what happens in a metaphor and on the connection between experience and metaphors. In his compactness thesis, he claimed that in a metaphor only a few words are necessary to reveal a whole world of meaning. He stated that "Language comprehension can take place (e.g. by means of metaphor) without the need for the message to explicitly spell out all the details" (Ortony, 1975, p. 47). Furthermore, a metaphor can convey things that cannot be expressed otherwise. Ortony describes this phenomenon in his inexpressibility thesis, in which he states that "there are cases in which it would seem that there is no possible way of literally saying what has to be said, so that if it is to be said at all metaphor is essential as a vehicle for its expression" (Ortony, 1975, p. 49). These two theses are concerned with the nature of the metaphor. In his third thesis, named the vividness thesis, Ortony is concerned with the connection of a metaphor to experience. He claims that our experience is continuous and that the symbolic systems (e.g., language) we use to report on our experiences are discrete. Metaphors are particularly vivid "because of their proximity to, and parasitic utilization of perceived experience; by circumventing discretization they enable the communication of ideas with a richness of detail much less likely to come about in the normal course of events" (Ortony, 1975, p. 50). Because metaphors are so close to experience, they also have a strong emotive force.

Providing a teacher with a number of metaphors gives him or her the opportunity to react to the multiple meanings implied by these metaphors, and can help him or her to express what he or she believes. Our assumption was that if teachers are given the chance to react to a diversity of metaphors on teaching and learning, their belief schemes will be 'activated' so they will report on connected beliefs as well. Or, as Pratt (1998) puts it "Tug on one belief and the entire web (*of beliefs*) responds" (p. 215).

3.3. Method

3.3.1 Sample

Semi-structured interviews were used to collect data. These interviews were conducted with 16 teachers in upper secondary education (11 male; 5 female) and 20 teachers at university (17 male; 3 female). The secondary teachers taught the following subjects: Chemistry (n=2), Physics (n=2), Mathematics (n=1), Dutch language (n=2), English language (n=2), German language (n=1), French language (n=1), Classics (n=1), History (n=1), Economics (n=2), Geography (n=1). The university teachers taught in the following disciplines: Chemistry (n=1), Physics (n=1), Mathematics (n=10, Biology (n=1), Medicine (n=2), Dutch language and literature(n=2), French language and literature (n=1), German language and literature (n=1), History (n=2), Economics (n=2), Architecture (n=2), Law (n=2), Psychology (n=1), Education (n=1). The mean age of the upper secondary teachers

was 45 years (ranging from 31 to 59 years) and that of the university teachers was also 45 years (ranging from 28 to 56 years). The average length of experience in education was 18 years in secondary education (ranging from 7 to 34 years) and 19 years in higher education (ranging from 4 to 35 years).

The purpose of the study was to describe the variation in perspectives, so we wanted as much variation between the teachers as possible. Therefore, we selected different schools (n=5) and faculties (from three universities) and chose teachers (1) who taught different subjects, and (2) whose length of experience in teaching varied. The teachers were contacted and the purpose of the study was explained. If a teacher agreed to participate, an appointment was made with him or her for an interview.

3.3.2 Instrument

3.3.2.1 Selection of metaphors

We assumed that teachers' perspectives on self-regulated learning are related to both teaching and learning, and we selected metaphors about both. Especially the role of the teacher in the regulation of the learning process and the instructional activities can be indicative of his or her perspective on self-regulated learning.

The metaphors about teaching used were selected from an article by Fox (1983). In Fox's study, polytechnic teachers were asked 'What do you mean by teaching?' The results indicated a number of personal theories, which were divided into simple and developed personal theories about teaching. Fox found that some teachers talked in 'simple' terms about teaching: 'I tell something and as a consequence the learners know'. On the other hand, there were teachers who considered teaching to be a complex process in which the student "is a contributing partner to his own learning (Fox, 1983, p. 156)". Within both simple and developed personal theories, variations could be distinguished. Each variation was then represented in a metaphor (see Table 3.1).

Table 3.1

Personal theories of Fox and corresponding metaphors

Theories	Variety of personal theories	Metaphors corresponding to personal theories
Simple Theories	Transfer Theory	It is the teachers' task to offer difficult material in sizeable pieces. Teaching is like scattering seeds in the wind; the teacher cannot determine what happens with it.
	Shaping Theory	Students are like raw material which has to be formed according to a predetermined pattern.
Hybrid Theory	Building Theory	Teaching is like making connections between different parts of the subject matter. It is the teachers' task to arrange a building site for students and to deliver the relevant material.
Developed Theories	Travelling Theory	Education is like a journey through the landscape of the subject with the teacher as a guide to a group of students.
	Growing Theory	The teacher is like a gardener who gives every plant in his garden what it needs.

On the left in Table 3.1 are the theories Fox distinguished, and on the right the metaphors corresponding to each theory. We used these metaphors because they covered a large variation in beliefs about teaching, and we assumed that they would stimulate teachers to explicate their own beliefs.

In addition to these teaching metaphors, we selected metaphors about learning from a study by Ebbens (1994). In this study an in-service training programme called 'All students involved!', aimed at improving teachers' abilities to promote independent learning, was evaluated. Both teachers' behavior and teachers' perspectives were investigated. Ebbens compiled this set of metaphors to cover a variety of ideas about learning and used them in interviews about teachers' perspectives. We used the following metaphors from his study (Ebbens, 1994, p. 66) :

Learning is like buying
Learning is like climbing a mountain.
Learning is like drinking
Learning is like organizing a hunt
Learning is like arranging a toolkit
Learning is like building
Learning is like storing data

3.3.2.2.Instrument development

The interview questions were tested in a pilot study in two rounds, together involving 6 teachers from both upper secondary and higher education. In the first round, three interviews were held, aimed at finding out whether the interview questions were clear to the respondents and if the selected metaphors about teaching (Fox, 1983) helped the respondents explicate their beliefs. In these

interviews, the teachers were asked directly for their beliefs about self-regulated learning. The use of this term appeared to be problematic because 1) the teachers related the concept to educational innovations in (secondary) education, which not all of them appreciated and 2) not all teachers understood its meaning correctly (jargon). We concluded that especially the explanation teachers gave of the meaning of a metaphor would provide us with valuable data.
In the second round, which also consisted of three interviews, the main aim was to find out whether the selected metaphors about learning (Ebbens, 1994) stimulated the teachers to explicate their beliefs about learning. These interviews revealed that the metaphors helped teachers to verbalize their ideas about student learning because it appeared that it was easy to agree or disagree with the metaphors, and that the teachers were able to explain why they agreed or disagreed with a metaphor.

The final interview scheme consisted of two parts: (I) on perspective on teaching and (II) on perspective on learning (see Table 2.1 in Chapter 2).

3.3.3 Procedure

After some introductory questions about their subject, years of experience, and context, the respondents were asked the questions as shown in Table 2.1, Chapter 2. The procedure was as follows. The interviewer asked the teachers to read each metaphor aloud and give a reaction. The purpose of this was to give the teachers an opportunity to react freely to all aspects of the metaphor. After the teachers had commented on all metaphors about teaching, they were asked to indicate the metaphor they preferred and to explain why.

The interviews all took place at the schools or faculties where the teachers worked in the period April to July 2001, and from October to December 2001. The average duration of the interviews was approximately 60 minutes (ranging from 35 minutes to 120 minutes). The possibility of having the transcript of their interview was offered to all respondents. All interviews were tape-recorded and transcribed verbatim. The transcripts were used for the analysis.

3.3.4 Analysis

A qualitative method was employed to analyze the interview data (Pratt, 1992; Prosser et al., 1994). The method of analysis we used had some theoretical and practical aspects in common with phenomenographic analysis. Phenomenography, as developed by Marton (Marton & Booth, 1997), is the investigation of the way people experience a phenomenon. The object of investigation is not the phenomenon itself, like self-regulated learning, but the way people view the phenomenon. Another assumption was that people have limited ways of experiencing a phenomenon (typically ranging from 2 to 7 qualitatively different perspectives). The analysis of the interview data was also inspired by the phenomenographical method: the identification of themes in the data (making use of 'decontextualized' quotes from the interviews, resulting in a so-called 'pool of meaning') and the description of variation within each theme (Marton & Booth, 1997).

The analysis consisted of three phases: in phase 1) a description of themes and categories of description was made; in phase 2) the interrater reliability was established; and in phase 3) a comparison was made between secondary and university teachers. The first phase of the analysis consisted of three steps, which are visualized in Figure 3.1.

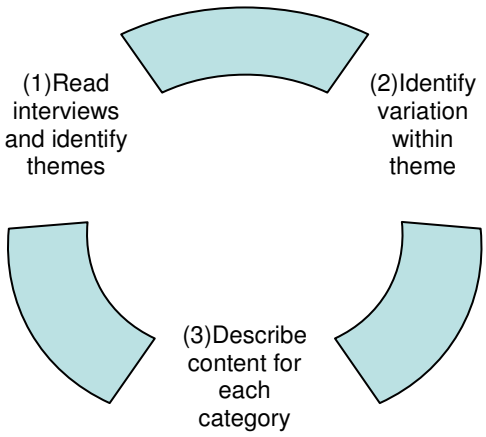

Figure 3.1: Phase 1 of the analysis: Development of a system of categories to analyze interviews

In the first step, transcripts of interviews with a small number of teachers were selected (n=5) which showed clear variation in the ideas expressed about teaching and learning. Transcripts of interviews with both upper secondary and university teachers were used. The first and second authors read these interviews thoroughly to identify important 'themes' (for example, learning). Themes were considered important if they pertained to teachers' perspectives on self-regulated learning. The researchers first identified themes separately, and then compared them to each other. Next, the themes were discussed by the researchers to minimize any overlap that might occur between themes.

Units of analysis were defined by theme. Krippendorff (1980) refers to this way of defining units as 'thematic units' which are identified 'by their correspondence to a particular structural definition of the content of narratives, explanations, or interpretations' (Krippendorff, 1980, p.62). In this study, a unit ended when a new theme was introduced. In most cases, the complete answer to an interview question was one unit of analysis (e.g., quotation). All quotations on a specific theme, for instance, 'learning process', were ordered in the second step of the analysis by comparing quotations on one theme. The various new

aspects identified within each theme were called categories of description (see Table 2.2 in Chapter 2).

In the third step, the authors described the content of each category of description. A category of description was assigned to a quotation when the quotation contained the elements mentioned in the description of the category. An example of a description of the category 'development' (part of the theme 'goals') was "The goal of teaching is to stimulate students in order that the talents they have can be fully developed". The first phase of the analysis continued until all diversity in the interviews seemed to be covered; in other words, until 'saturation' occurred (Strauss & Corbin, 1990).

In the second phase, a research assistant was involved in the process of analysis to see if the themes and the categories of description could be applied by a person not familiar with the data. Five interviews were coded by the first author and the research assistant using the set of categories of description generated in the first phase. Some categories were refined and examples were added to clarify the categories. The interrater reliability with two raters was .78 (Cohen's kappa) based on 38 interview fragments and 32 categories of description (Eggen & Sanders, 1993). Categories of description were then assigned to all 36 interview transcripts using Atlas-ti, a software program for qualitative analysis (Muhr, 1997).

Finally, in the third phase of the analysis, the two groups of teachers were compared. We used frequencies as an indicator of the "amount of attention or the degree to which an attitude or belief permeates a population" (Krippendorff, 1982, p.109). In this case, we used frequencies as an indicator of differences between secondary and university teachers. The results of the second phase, in which all interviews were analyzed in terms of categories of description, were used as a starting point, that is, as an adequate way to characterize the content of each interview. We used two criteria to analyze the differences between secondary and university teachers. First, we compared the absolute frequencies of the categories of description for each group. If a frequency was more than twice as high in one of the groups as in the other group, the category of description was considered to be more important for the first group. We used this criterion as a rule of thumb, and did not correct for the unequal number of interviews in the groups: 16 interviews with secondary teachers and 20 interviews with university teachers. In addition, we looked at the average number of words (length) of the quotations belonging to a category to check if the quotations were of a similar length. Second, we re-read the quotations belonging to a certain category of description from each group to see if there were differences in the content of the quotations. Although the content of each category of description was described in the second phase of the analysis (see above), we re-examined the quotations for possible differences in nuance between the two groups of teachers.

3.4. Results

3.4.1 Codebook

As a result of the first phase of the qualitative analysis of the interviews, six themes were identified, each containing four to seven categories of description. A short description of each of these categories is given in Chapter 2, Table 2.2.

3.4.2 Similarities and differences between secondary and university teachers' perspectives

In this section we will describe the similarities and differences between secondary and university teachers' perspectives. We will focus mainly on the differences between teachers. The similarities can be seen in the Tables in this section in which each theme and the associated categories of description can be found. In the concluding section we will expand more on the similarities between teachers.

Goals of Education. As Table 3.2 indicates, upper secondary teachers regard development of students and pedagogy as important goals of their teaching. The average length of the quotations (in words) in the category of description development is similar for both groups of teachers. In the case of pedagogy, however, the quotations of secondary teachers are much longer than those of university teachers. University teachers appeared to view both opinion and independence as important goals of their teaching. The category of description opinion is exclusive to university teachers. In the case of independence, the quotations of university teachers are longer than those of teachers in secondary education.

Table 3.2

Goals of Education

	Knowledge	Opinion	Development	Pedagogy	Independence
SEd					
Frequencies	7	0	**14**	**10**	14
Av.length	62	n.a.	**82**	**90**	65
HEd					
Frequencies	12	**12**	5	2	**30**
Av.length	77	**83**	90	30	**85**

N.B. The numbers in bold indicate the importance of a category of description for either secondary or university teachers.

In the category of description development, upper secondary teachers tended to emphasize the individual qualities of the student which are seen as the starting point for development: the teacher stimulates the students, taking their personal qualities into account.

Examples: ‘ Development’:

“I do not agree with that. (Why not?) First of all, students are not raw material. Students are individuals, with their own individuality. And that has to be educated.. well, they don’t have to be educated, they do that themselves, from their own development, from their inner selves.” (S4)

“No, not into a certain pattern because the raw material already has a certain shape. Something is present in the basis. And I think that you have to take care that what’s in it can come to maturity. That it is given room and not that you mould it according to your views. You certainly shouldn’t do that. Because you always get standardization.” (S16)

N.B. The letters ‘S’ and ‘U’ at the end of each quotation stand for a secondary or a university teacher.

The other important goal for secondary teachers is pedagogy. Two elements emerged as important in their quotations. Firstly, teachers believe that their teaching, more than the delivery of content, educates students. The other aspect they stressed was more concrete: teaching students respect, and how to accept other students and communicate with them. The university teachers’ quotations on pedagogy do not contain the element of teaching specific norms and values to students.

Examples: ‘ Pedagogy’

“Yes, here you touch on the pedagogical aspects of education, of course. I think that you have to be very clear as a teacher and as a school about your moral principles. You have to indicate clearly the limits in behavior and in social intercourse.” (S19)

“It’s more about a general way of growing up, growing older and that you have contributed to that. But if I think they are only happy when they have learned (name of subject), no, I don’t think so.” (S3)

It is important for university teachers that students form an opinion on the subject matter they study, and that they learn how to perceive reality through the perspective of the subject area.

Examples: ‘ Opinion’

“What you strive for in principle is that students, when they come in, learn to absorb knowledge, that a change takes place. That they develop such an attitude that they can say, well, that’s what it says in the article, but what do I think myself? That’s very basic. I think that is an aspect of academic skills, I find it interesting to see that happen.” (U1)

> "So I think that it is very important that they are able to write book reviews, that they can judge the books they've read, that they can form viewpoints. Much more than that, for me the accent is on acquiring knowledge." (U16)

The category of description independence was found in the transcripts of both secondary and university teachers. In their quotations many university teachers refer to the attitude of an academic, and to a development in students during their studies of such an academic attitude. Usual aspects of this are that students have to take responsibility for themselves, and the idea of students becoming independent thinkers and having the right attitude to study. Quotations of secondary teachers have some aspects in common with those of university teachers. Reference is also made in these quotations to independent thinking, attitude to study and responsibility. However, statements referring to an academic attitude were made by university teachers only.

> Examples: ' Independence'

> " I find it very important that a student can search. That famous proverb: give a man a fish and he has food for one day; give him a fishing rod and he has food for the rest of his life. Yes. That is actually.. that is the idea. Yes, teaching students to learn. And actually to become independent of me."(U7)

> "They follow an academic course of studies and that means that you deliver academics. And academics have certain characteristics. They are people who work independently, can be creative, solve certain problems, can report on them both verbally and in writing. It is a certain pattern you have to strive for." (U18)

Learning process. The theme learning revealed the following differences between upper secondary and university teachers (see Table 3.3). The category of learning as structuring and the category of learning as meaning appeared to be important for university teachers. The average length of the quotations is almost the same for both groups of teachers. Although there is not a factor-2 difference, the category of knowledge is also important for university teachers.

Table 3.3

Learning process

	Knowledge	Apply	Structure	Meaning	Change
SEd					
Frequencies	36	24	18	9	4
Av.length	79	71	94	108	100
HEd					
Frequencies	60	28	**39**	**19**	4
Av.Length	88	103	**94**	**100**	59

In learning as structuring, the focus is on ordering the material to be studied, and making connections between different parts of the subject matter. Some

university teachers indicated a difference between students in their first year and in their last year. Students in their first year are focused more on reproducing knowledge, whereas students at the end of their studies are more focused on comparing and structuring the content and making connections with other topics they have studied. As a practical example, some teachers mentioned making abstracts of (literary) texts.

> Examples: ' Structuring'
>
> "Academic learning is more than storing data, you also have to, in computer language, make the connections between different directories and between different programs or skills. It is part of it all, so storing data is part of it, but not the only thing." (U15)
>
> "Laying a foundation of the basic concepts and seeing the connections between them, and then, finally, the fine-tuning of all the details." (U7)

Also important for university teachers is the category of learning as acquiring meaning. The emphasis in university teachers' quotations is on understanding and gaining insight into the subject matter, and relating this subject matter to other disciplines, (historical) contexts, and their own experiences.

> Examples: ' Meaning'
>
> "But they have to do something… look, understanding is also a part of it..relating it to your own life. Mmmh… and I think that that is very important at the start of a learning process. You learn more if you understand it for yourself." (U4)
>
> "There is something in it that you discover things, but what I think really is that if you really try to learn something then you know already where you have to look for knowledge. And then you've had education, you have done assignments yourself and then you have to bring it all together in the end and learn it and then 'where to look' is no longer an issue." (U8)

Characteristics of the learning process. Learning was characterized as a process by university teachers (see Table 3.4). These teachers placed the accent on learning as a continuous process which is never finished. The process is what matters, and not the outcome of learning. Some teachers stressed the fact that learning cannot be planned in advance; the original goal can change in the process of learning. Secondary teachers' quotations on process stress the same aspects; however, they did not refer to the idea that learning cannot be planned and that a goal can change during the learning process.

Table 3.4

Characteristics of the Learning Process

	Discovery	Goal	Order	Process
SEd				
Frequencies	13	26	13	11
Av.length	51	59	112	74
HEd				
Frequencies	20	19	10	**27**
Av.length	71	84	122	**106**

Examples: ' Process'

"Yes, maybe I would choose for 'building' then, if I look at myself, busy writing my thesis; that is a building, it is something I am constantly occupied with, constantly try to go further. Maybe I chose 'building' because it also involves arranging a toolkit and searching, you always end up somewhere; the same for arranging a toolkit; if it is arranged, then it is finished, but building is maybe, yes it is more open, it leaves more room to be continually busy. Yes, it's more like a process." (U11)

"Yes. It all starts from the final product, it seems that is what it is all about. Thinking about a problem is more important than solving it. Posing questions is more important than giving the right answers." (U2)

Students. In the categories of description related to the theme students, no substantial differences were found between secondary and university teachers, as is apparent from the frequencies in Table 3.5.

Table 3.5

Student

	Active-Control	Active-initiative	Active-Not working	Capability	Diverse-group	Diverse-individual
SEd	30	21	7	13	36	38
Frequencies	66	67	123	60	131	91
Av.length						
HEd	29	20	13	9	42	26
Frequencies	77	96	108	47	104	76
Av.length						

Regulation. In the theme regulation, no clear and important category of description was found for secondary or university teachers (see Table 3.6). Although transfer was found more than twice as often in the quotations of secondary teachers, the number was very small. The high number of quotations on teacher regulation is remarkable. We consider this to be partly an artifact caused by the instrument used, which invited teachers to talk about their own teaching practice.

Table 3.6

Regulation

	Teacher	Together	Student	Flexible	Transfer
SEd	109	22	58	35	10
Frequencies	95	68	79	114	98
Av.length					
HEd	95	16	57	29	5
Frequencies	109	102	97	107	95
Av.length					

Instructional activities. In the theme instructional activities, the following differences were found (see Table 3.7). Social activities were more often mentioned by secondary teachers as were regulative activities focused on the learning environment. Although there is not a factor-2 difference between secondary and university teachers in the category of structuring, the difference is considerable.

Table 3.7
Instructional activities

	Cognitive Convey	Cognitive Explain	Cognitive Structure	Affective Social	Affective Motivation	Regulative Learn	Regulative Environment
SEd							
Frequencies	26	16	37	35	82	36	23
Av.Length	73	63	103	116	109	101	106
HEd							
Frequencies	24	27	63	16	90	26	9
Av.Length	62	96	112	126	102	93	80

In secondary teachers' quotations on social activities, the accent is on communicating with students, personal involvement, and creating a positive atmosphere in the classroom. In university teachers' quotations on social activities, besides (personal) contact with students, a constraint is also mentioned. Students sometimes find it difficult to contact the teacher.

> Examples: 'Affective-Social'
>
> "And I hope then that the openness, communicating with each other.. if that is all optimal I hope that the student finds it agreeable. … But communication is important. You notice sometimes that a topic isn't working or that someone is not feeling well.. if we don't know that about each other, then I could react in the wrong way. So I invite them to tell it to me." (S1)

> "Interest in the student, the teacher should make sure there is an agreeable atmosphere, the atmosphere in the classroom should be nice.. so students like to come to the lessons. Not so much because of the subject, but because of the atmosphere." (S11)

Secondary teachers also stressed the importance of the environment for studying. They stressed the importance of creating an environment where students are stimulated and have the physical facilities needed to study. The same accents were found in university teachers' quotations.

> Examples: 'Regulative-Environment'
>
> "Just a building site where they can use their own creativity; in their own time and at their own pace, and according to their own needs. And if they want something else, let them go." (S4)
>
> "I find a building site for students much more positive. I think of (open) research where so much material is present. And let them play and think of nice things. A building site is also a metaphor for working on themselves." (S14)

In Table 3.8, the main differences described in the previous paragraphs are summarized for both groups of teachers.

Table 3.8

Importance of Categories of Description in secondary and higher education

Theme	**Important in higher education**	**Important in secondary education**
Goals	Opinion Independence	Pedagogy Development
Learning	*Knowledge* Structure Meaning	
Characteristics of the learning process	Process	
Students		
Regulation		
Instructional activities	*Cognitive-structure*	Affective-social Regulative-environment

N.B. The categories of description 'knowledge' and 'cognitive-structure' are indicated askew because there is not a factor 2 difference between university and secondary teachers.

3.5 Discussion

Our main research question concerned the similarities and differences between teachers' perspectives on self-regulated learning. In this section, we draw conclusions and propose possible explanations for the results.

Although we found differences between the two groups of teachers, there were also many similarities. All themes and most of the categories of description were found in both groups of teachers. Teachers' beliefs about students and regulation apparently do not differ between the two groups since neither category of description was more important for secondary or university teachers. Regulation of the learning process in secondary and higher education is believed to be done by both teachers and learners. Beliefs about students' initiative, activity, and capability are also similar in both groups of teachers.

Other similarities were found in the goal of acquiring knowledge. The two groups of teachers share beliefs about learning, perceiving learning as either a quantitative increase of knowledge or a qualitative change of knowledge (see also Pratt, 1998). Furthermore, the learning process is characterized both as an orderly process, directed at a goal, and as a process involving unexpected discoveries. Finally, the instructional activities teachers reported on were similar concerning the cognitive part of the instruction. Affective activities aimed at motivating students and regulative activities aimed at teaching them to learn were also the same for both groups of teachers. These results are in line with Boulton-Lewis et al. (2001), who suggest that the conceptions of secondary teachers they found are in line with previous research done in tertiary education by, for example, Patrick and Kember.

Concerning the differences we found, overall, university teachers seem to be more focused on content, having opinion and independence as a goal, and perceiving learning as a process in which structuring and meaning are important. Secondary teachers, however, focus more on the person, aiming at development and pedagogy, and placing an emphasis on social activities and the learning environment. These results are in line with the work of Marton and Booth (1997), who distinguished between teachers 'focusing on the content (it is seen as potentially variable) and not on the learners (they are taken for granted) and a focus on the learners (they are seen as potentially variable) and not on the content (it is taken for granted)' (Marton & Booth, 1997, p.173). These authors claim, furthermore, that the more advanced the level of education is, the more likely that the focus of the teacher is on the content and the less likely that it is on the learner.

We mentioned in the introduction the differences said to exist between secondary and university teachers, amongst others, the differences in their roles, and the different preparation for teaching. In secondary education, the role of the teacher involves teaching one or two subjects with a fixed content. Because of this more or less fixed content, secondary teachers may focus more on the variation in the students. The work of university teachers includes both teaching and doing research. The content of their teaching may vary according to their research. These teachers may be focused more on the variation in content,

causing them to take their students for granted in other words to see their students as one group.

Another difference between secondary and university teachers may be found in the different preparation for teaching. Secondary teachers in the Netherlands almost without exception followed a postgraduate teacher training course of one year, while university teachers often did not take any didactic training. It could very well be that preparation for the teaching profession influenced the focus of the teachers as is apparent from a study by Sundqvist quoted by Marton and Booth (1997) which shows that student teachers in their first and final years of study differed with regard to their ideas about teaching a text with a certain topic. Student teachers in their first year focused on how to teach the content of the topic. Student teachers in their final year, however, when asked to reflect on the text provided and how to teach it to students, aimed at the variation between students.

3.6 Conclusion

We suggested that this study on teachers' perspectives could help improve our understanding of the problematic transition of students from secondary to higher education. We found in this study that the main differences between secondary and university teachers were related to a focus on the variation between students and a focus on the variation in content. We assume that teachers' perspectives have an influence on their behavior. This difference between secondary and university teachers is likely to contribute to the problematic transition from secondary to university. Students in upper secondary education are in general taught by teachers who are more personally interested in their students, valuing the personal development of their students and teaching them norms and values. Students going to university, however, meet teachers with a different perspective and likely a different practice which is more focused on the different aspects of the discipline, the discussions which are important, and developing a critical attitude. Some students have problems adapting to university and the way teachers teach has an influence, apparently students are used to and expect 1) more (personal) support and 2) a different way of teaching. According to research quoted by Lueddeke (2003) these two reasons are among the main reasons for dropout besides curriculum overload and a loss of interest in the subject matter.

The question is what can be done to improve the transition. In general it seems that balancing on both sides is needed; in secondary education more focusing on content and in higher education more focusing on the person. Secondary education teachers may need to focus more on the variation in the content they teach to prepare their students for university teaching. A concrete example is the project 'the university in the classroom' at Leiden University where university teachers are invited to secondary schools to teach a guest lesson, introducing the discipline teachers work in at university. Universities could invest more in the initial support of students. Some universities already use

mentoring groups in which not only content matters are discussed but also personal matters of the students participating.

It is important is to make both secondary and higher education teachers aware of their own and other teachers' perspectives and the possible influence on students learning and adaptation in higher education for instance in pre-service and in-service courses.

3.7 Suggestions for future research

It is difficult to make a generalization to the whole population of Dutch secondary and university teachers because our sample was taken from various schools and various universities. A large-scale study is needed to investigate whether these differences can be found in the whole of the population. Another aspect worth investigating is the influence of the subject matter taught, of the culture of the (research) group teachers belong to, and of other background factors such as age and experience of teachers on the perspectives of both groups of teachers. Another worthwhile enterprise would be to investigate how these perspectives are related to teacher behavior in everyday practice and how students perceive different teachers. Knowledge of teachers' perspectives and actions can help us to understand and improve teaching practice and, ultimately, influence student learning (Campbell, Smith, Boulton-Lewis, Brownlee, Burnett, Carrington, & Purdie, 2001; Kember, 1997; Marton & Booth, 1997).

In this research project, we claimed that teacher' beliefs should be investigated using an indirect measure like metaphors. Although we believe that the metaphors used helped to make beliefs about the complex concept of self-regulated learning explicit, it is the question whether this approach was successful. Systematic research is needed to investigate if this method gives different results than those found using other methods aimed at measuring beliefs.

4

Focus on Learners or Content? A survey study on teachers' perspectives in secondary and university education[8]

Abstract

Innovations in secondary education in the Netherlands have aimed to improve the transition to higher education by introducing self-regulated learning. We investigated teachers' perspectives on this development towards self-regulated learning and the similarities and differences between secondary and university teachers. We performed a large-scale survey study among 675 teachers from secondary and higher education. The outcomes of this study show that teachers in secondary education and at university have largely similar beliefs, although they differ regarding their intentions. Secondary education teachers attach more importance to the education of pupils and university teachers value the development of a critical attitude in students.

[8] Manuscript submitted for publication:
Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. *Zelfstandig leren: een vergelijking van de perspectieven van docenten in het voortgezet en wetenschappelijk onderwijs.*

4.1 Introduction

Educational innovations in the Netherlands in recent years have aimed to improve the transition from upper secondary to higher education by offering a broader range of subjects, and the accent is on active and self-regulated learning of pupils. This emphasis on the learning process of pupils, instead of on acquiring knowledge, should prepare pupils better for acquiring new knowledge, which is crucial for success in further education and for 'lifelong learning'.

Active and self-regulated learning requires a form of education in which the teacher has a different role, as guide of the learning process of the student. This has also been described as process-oriented education. It is, therefore, important that teachers have insight into pupils' learning strategies, so that they can take account of these strategies in their teaching. The different roles of the teacher in this context are described by Vermunt and Verloop (1999): the teacher as diagnostician, as challenger, as model learner, as activator, as monitor, and as evaluator. To be able to put these roles into practice, it is important that teachers know and endorse the ideas on which process-oriented teaching is founded. If the concept of 'active and self-regulated learning' is to become concrete in secondary education, it is important that teachers support these ideas. For a good transition it is also necessary not only that teachers in secondary education have beliefs which fit process-oriented education, but also that university teachers hold beliefs which are in line with these ideas.

Measures to improve the transition must not only be focused on the student, but should also involve the teachers. They are the providers of education and their role influences the study behavior of their students (Trigwell, Prosser, & Waterhouse, 1999). A study was performed in secondary education, in the Dutch context, by Bolhuis and Voeten (2004), which shows that teachers in secondary education have mainly process-oriented beliefs. We have not found similar research on university teachers. Our aim was to make a comparison between teachers in secondary and higher education. Below, in the following sections we discuss teachers' perspectives and the role of the teacher in self-regulated learning.

4.2 Theoretical framework

4.2.1 Teachers' perspectives

In this study, we aimed to investigate teachers' perspectives. Different terms are used in the literature to describe these perspectives: views, beliefs, conceptions, subjective theories, etc. (Fox, 1983; Boulton-lewis, Smith, McCrindle, Burnett, & Campbell, 2001; Prosser, Trigwell, & Taylor, 1994). Pajares (1992) refers to beliefs as a 'messy construct'; especially because the distinction between knowledge and beliefs is problematic. We used Pratt's definition (1992, 1998), who defined perspectives as

"Specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every

aspect of our perceived world, and in so doing use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world (Pratt, 1992, p. 204)."

Perspectives and conceptions are seen as identical terms by Pratt. According to this author, perspectives consist of an 'inter-related set' of intentions, beliefs and (perceived) actions which 'guide and justify teachers' behavior' (Pratt, 2001). Intentions refer to what a teacher aims to accomplish, and beliefs refer to the importance, reasonableness, and justifiableness of intentions and behavior. Behavior is visible but intentions and beliefs are often implicit (Pratt, 1998). To understand teachers' behavior it is important to understand the intentions and beliefs behind it.

4.2.2 Self-regulated learning –the role of the teacher

The role of the teacher in the process of self-regulated learning has received ample attention in the literature. Hattie, Biggs, and Purdie (1996) indicate in their review of the effects of study skills interventions that these have to be learned in the context of the subject and that a high level of learner activity and metacognitive awareness needs to be stimulated by the teacher ('in a teaching context'). Study skills must be learnt in the context of a subject and the teacher has the important role of stimulating the development of study skills. Different models have been developed to stimulate the self-regulation skills of students, for instance, the process-oriented – adaptive learning model (PRO-AL) by Boekaerts and Simons (1997) and the model of Vermunt and Verschaffel (2000).

PRO-AL (Boekaerts & Simons, 1997) refers to process-oriented teaching and adaptive learning. Process-oriented teaching is a form of instruction which pays explicit attention to the learning process, like preparation for learning, and execution and regulation of learning activities. Adaptive learning refers to learning processes in which different forms of regulation, for instance, regulation of emotions and checks of whether the learning material is understood, are explicitly used and exercised. The authors distinguish between three regimes in instruction according to PRO-AL; teacher regulation, shared regulation, and learner regulation. The regimes differ in the extent of control mainly exercised by the teacher, the teacher and the learner, or the learner. The final goal of PRO-AL for teachers is to reach the third regime, where regulation is mainly in the hands of the learner.

In Vermunt and Verschaffel's model (2000), the goal of process-oriented teaching is to teach learning and thinking strategies as well as domain-specific knowledge. Students are taught to construct their knowledge of a specific domain, and to change and use this knowledge. The model is based on research and theories about the learning of students and the interplay between self-regulation and external regulation. As in the PRO-AL model, the accent is on the gradual transfer of the regulation of thinking and learning processes from the teacher to the student.

The interplay between self-regulated learning and externally regulated learning can give rise to friction. Vermunt distinguishes between two types of

friction: constructive and destructive friction. Constructive friction encourages students to use learning and thinking strategies they have never used before, and this can also lead to the increase of the use of other strategies. Destructive friction occurs when a teacher expects too much from the self-regulation strategies of students or when the teacher takes over strategies the students already control. In both models, the person in control of the learning activities is of great importance. Whether the teacher or the learner is the one in control is determined among other things, by the perspective of the teacher on self-regulated learning.

4.2.3 Teachers' perspectives on self-regulated learning

Much research has been done into teachers' beliefs on teaching and learning both in secondary education (see also Aguirre & Speer, 2000; Gao & Watkins, 2002; Boulton-Lewis, Smith, McCrindle, Burnett, & Campbell, 2001) and at university (see also Dunkin & Precians, 1992; Van Driel, Verloop, Van Werven, & Dekkers, 1997; Kember & Kwan, 2000), but few researchers have specifically investigated beliefs on self-regulated learning. We found two studies, both in secondary education, concerned with teachers' beliefs on self-regulated learning. Waeytens, Lens, and Vandenberghe (2002) investigated teachers' conceptions about 'learning to learn'. The authors defined learning to learn as a set of skills, including study skills, critical analysis, time management, planning, and posing goals. Fifty-one teachers of two subjects, Dutch language and mathematics, were interviewed. A qualitative analysis of the data showed that 71% of the teachers had a narrow view on learning to learn, and 29% had a broad view on it. In the narrow view, the function of learning to learn is supportive, the teachers' task is to transmit knowledge, the learning process is seen as an accumulation of facts, the student is passive, and instruction is in the hands of the teacher. In the broad view on learning to learn, the function of learning to learn is development, the teachers' task is to guide students, the learning process is active, the students are active, and they are responsible for the learning activities.

The second study we found was performed by Bolhuis and Voeten (2004) with the aim of determining whether teachers' conceptions were in line with the process-oriented view of education in secondary education in the Netherlands. A questionnaire was developed based on five conceptions from the literature related to learning: self-regulation of learning, learning as the active construction of knowledge, the social character of learning, a dynamic view of intelligence, and tolerance of uncertainty. Tolerance of uncertainty determines the way a learner is motivated to learn from new situations which are in conflict with what he or she already knows. The questionnaire consisted of two opposite statements, one of which represented a process-oriented view and the other a traditional view on learning. The items belonging to the traditional view on learning were characterized by teacher regulation, knowledge as a (determined) set of facts, learning as an individual process, a static view of intelligence, and a low tolerance of uncertainty. The items representing a process-oriented view were characterized by learner regulation, knowledge as active construction by the learner, learning as a social process, a dynamic view of intelligence, and a high

tolerance of uncertainty. The teachers were asked to rate on a four-point scale with which of the two items they most agreed. The results of this study indicate that teachers in secondary education, on average, preferred a process-oriented view on learning to a traditional view.

We did not find studies in which university teachers' perspectives on self-regulated learning were specifically investigated. Teachers' perspectives on learning and teaching have been investigated extensively, as mentioned previously, both in secondary education and at university (Bolhuis & Voeten, 2004; Samuelowicz & Bain, 2001). In some studies on teachers' perspectives in secondary education, the outcomes are related to university teachers' perspectives. Boulton-Lewis (2004) aimed to give an overview of both teachers' and students' beliefs on teaching and learning, both in secondary education and at university. Her conclusion is that in most (phenomenographic) studies at schools and universities among both teachers and students, the same or closely related beliefs were found, namely, beliefs focused on the teacher and the content and beliefs related to the student and the learning process.

Although a comparison has been made of teachers' perspectives in secondary and higher education, they have not been investigated simultaneously in one study. This omission has been noted by several authors, including Entwistle and Walker (2000) and Menges and Austin (2001). A probable cause for this omission is the large differences between the contexts teachers work in and the different goals of secondary and higher education, the primary focus of university teachers on research rather than teaching, the different ways of preparing for teaching, the different roles and responsibilities of teachers, and the different target groups they serve (Menges & Austin, 2001; Kember, 1997).

Our aim was to contribute to the knowledge about teachers' perspectives on self-regulated learning both in secondary and in higher education. We also aimed to contribute to an improved understanding of the transition from secondary education to university.

The research questions were as follows:

- What are the similarities and differences between secondary and university teachers' perspectives on self-regulated learning?
- What is the relation between independent variables, like gender, age, and teaching experience, and teachers' perspectives on self-regulated learning?

4.3 Method

4.3.1 Development of the instrument

Because we aimed to make a large-scale comparison of teachers' perspectives, we decided to use a (closed) questionnaire. This questionnaire was developed in several steps. In preparation for this study, we held an exploratory interview study with 36 teachers from both secondary and higher education, in order to

describe the diversity in teachers' perspectives and to gain insight into teachers' 'natural' language. To analyze the interviews, a code scheme was developed from the interview protocols. First, important themes were distinguished, namely, goals of teaching, learning process, students, and regulation (see also Chapter 2). A large variety of items was formulated for each of these themes, mainly based on representative quotations of the teachers from the interviews. Two versions of the questionnaire were made: one for teachers in secondary education and one for teachers in higher education. The content of the items was identical but there were differences at word level. For instance, items were about lessons in the version for secondary teachers and about lectures in the version for higher education teachers. Since the two versions were largely similar, we refer to the questionnaire in the singular, but in all cases we mean the two versions of the questionnaire.

The first version of the questionnaire consisted of 150 items and was given to six experts, who, judged the items using the Task Difficulty Score (TDS) of Van der Zouwen and Dijkstra (2002). We aimed to increase the clarity of the items and to reduce the size of the instrument. The TDS is a method of judging questionnaires in advance. Two assumptions are the foundation for this instrument: 1) the more the difficult the task of answering an item, the greater the chance of making 'mistakes', and 2) the difficulty of the task consists of two components: the difficulty of the question and lack of clarity about the task. The TDS is a short instrument consisting of 11 items which have to be filled in for every separate item of the questionnaire. Examples of items in the TDS are 'The question is ambiguous' and 'There are unknown words in the question' (for the complete instrument, see Table 4.1). The respondent, in this case the expert, scores a '0' (=not applicable) or a '1' (=applicable), depending on the applicability to the item under judgement; the maximum TDS-score per item is 11. The final score on the TDS indicates the difficulty of the item.

Table 4.1

Task Difficulty Score

Instruction: You can give each item a '0' or a '1' (no = 0 points / yes = 1 point)

1. In comparison to a simple survey question9, there are more cognitive operations necessary to 'calculate' the answer to this question.
2. To answer this question it is necessary to retrieve information from long-term memory.
3. The question is complex because different aspects have to be weighed against each other.10
4. The question is related to a hypothetical or future situation.
5. The answer alternatives / options do not fit the question.
6. The answer alternatives / options are unequally divided over the number of possible values of a variable.
7. The topic of the question is threatening (e.g., sickness, death, abandonment).
8. The answer alternatives / options differ strongly in social desirability.11
9. The question is ambiguous.
10. The question contains unfamiliar words.
11. It is not clear what the question exactly is and / or how the question should be answered (for instance, cross out, strike, etc.).

[9] A simple survey question is a question which can be answered easily without further explanation, like 'What is your age?'

[10] It can be about questions like "I think that commercials on TV give useful information about offers and about product use of other people." (agree – disagree). In this example, the respondent needs to consider whether he agrees / disagrees with the first part of the item and whether he agrees / disagrees with the second part of the item to be able to give a judgment about the total item.

[11] An example is, "Do you hit your children often?" (yes – no). 'Yes' is much less socially desirable than 'no'.

Because of the length of the questionnaire, each expert completed the TDS for approximately 50 items. One of the experts did not judge the requested number of items, so one set of items was only judged by one expert and the other 100 items were judged by two experts. The experts were also asked to comment on the instructions given to the respondents, the 7-point scale, the formulation of the items in general, and the formulation of all 50 items they had to judge.

The average score (M) on the TDS for all experts on all items was 2.3. The scores had a range of 0-8. All TDS scores (per item) which were higher than or equal to 2.5 were considered critically. These items were either reformulated (n=36) or removed (n=20). All items with a score of 2.5 or lower on the TDS were also considered using the comments of the experts, after which some items were reformulated (n=33).

A pilot study was performed in which 72 teachers from secondary education (n=33) and higher education (n=39) completed the questionnaire which consisted of 130 items. The teachers were given the opportunity to comment on the questionnaire in an enclosed form. The quality of the items was examined using the comments of the respondents on the items and the descriptive statistics per item. Based on these data, 9 items were removed and 10 items were reformulated.

The final questionnaire consisted of 121 items divided over four parts: goals of education, learning process, students, and regulation (see also Table 4.2). The items in the first part of the questionnaire were about the goals teachers aimed to achieve with their teaching. In the part on learning process, the items were about what learning is and what the characteristics of the learning process are. In the part on students, the items were about the capacities of students, the importance of students' initiative, and the importance of differences between students. In the part on regulation, finally, the items were about responsibility for the different parts of the learning process. In the parts on goals, learning process, and students, a 7-point likert scale was used by the teachers to indicate to what extent they agreed with an item. The 7-point scale consisted of the following points: 1=very much disagree, 2=disagree, 3=disagree more than agree, 4= disagree as much as agree, 5=agree more than disagree, 6=agree, and 7=very much agree. In the last part, regulation, a 5-point likert scale was used to indicate the extent to which an item was applicable to the teachers' own practice. This scale consisted of the following points: 1=almost never applicable, 2=sometimes applicable, 3=regularly applicable, 4=often applicable, and 5=almost always applicable.

Table 4.2

Structure of the questionnaire

Part	Scale	Examples of items
Part I Goals	Knowledge building	I aim to achieve in my teaching that students build up a certain amount of knowledge.
	Opinion	I aim to stimulate students to discuss the subject matter / material.
	Education	I think it is an important goal of my teaching to Teach students respect for others.
	Development	I think it is an important goal of my teaching to have students use their qualities to the full.
Part II Learning Process	Acquiring knowledge	I see learning as acquiring knowledge.
	Change	In learning the student gets a different view of himself / herself.
Part III Students	Expectations	I expect students to come up with questions about the learning material.
	Capacities	Students are more talented than they think.
	Differences	I think it is important to take into account the different learning styles of students.
Part IV Regulation	Teacher regulation	I transfer my knowledge to the students.
	Shared regulation	Together with students who understand the learning material, I explain the material to students who do not yet understand.
	Learner regulation	Students prepare the lesson / meeting independently.

4.3.2 Sample

The final version of the questionnaire was sent in May 2004 to a total of 2712 teachers from upper secondary education and from university. The sample consisted of teachers from different school subjects and from different disciplines.

One thousand, two hundred and ninety questionnaires were sent to 57 schools. The teachers in secondary education all worked at schools connected with the Graduate School of Education at Leiden University. The schools were mostly located in the west of the country.

All 1422 teachers of Leiden University received the questionnaire. This university was chosen because a broad range of disciplines is represented here. Every teacher from every department received a questionnaire at his / her work address. Leiden university consists of the following faculties: Archaeology, Medicine, Theology, Arts, Law, Social Sciences, Mathematics and Natural Sciences and Philosophy.

4.3.3 Procedure

The teachers in secondary education received the questionnaire from a contact person at the school. These contact persons were career counselors or mentors of beginning teachers. All contact persons received a letter separately containing an explanation of the goals of the study and brief instructions. The number of questionnaires these contact persons received, depended on the size of the school.

The university teachers all received the questionnaire directly at their work address. The database of university addresses was used (with permission) to send the questionnaires. In addition to the questionnaire, each teacher received a letter with a short explanation of the (importance of the) study. The teachers could indicate separately if they wished to receive a short report of the results. A non-response form was also added, so that if teachers did not wish to respond they could indicate why. Four reasons were supplied on the form, and space was provided to indicate other reasons: 1) I do not have time to respond to the questionnaire, 2) I never participate in questionnaire studies, 3) I no longer teach, 4) I already completed the questionnaire in the pilot study, and 5) other reason. After two weeks every teacher received a reminder (in secondary education from the contact persons at school) with the request to fill in the questionnaire if they had not already done so.

4.3.4 Data-analysis

Descriptive statistics were used to analyze the questionnaire data (means, standard deviations, and missing values). For the construction of scales, a Principal components Analysis (PCA) with varimax rotation was performed on the items in each of the four parts of the questionnaire. For every item set (goals of education, learning process, students, and regulation) a stable interpretable solution was sought. The following steps were taken. First, the 'scree pot' was considered to obtain an estimation of the number of possible components. Second, every possible solution was considered and items were removed if the loadings were 0.3 or lower, or if a item loaded on two components with a difference smaller than 0.3. The chosen value of 0.3 was arbitrary (De Heus, Van der Leeden, & Gazendam, 1995). If a relatively stable solution was found, we aimed to interpret the similarity in content between the items for each scale and we calculated the reliability (alpha) of the constructed scales. Finally, scale scores were calculated whereby (in the case of scales with 5 items or more) at least 75% of the items had to be filled in by the respondents, and when there were fewer than 5 items, all items needed to be filled in. If these criteria were not met, the scale scores were not taken into account.

To explore the differences between secondary and university teachers, an independent samples t-test was used on the scale scores. Furthermore, a discriminant analysis was performed to investigate the differences between the two groups. Discriminant Analysis is used to decide what variables discriminate between naturally occurring groups (Tabachnick & Fidell, 2001). Correlation analyses (two-tailed) were used to investigate the relation between the

independent variables, gender, age, and experience in education, and the scale scores. All analyses were conducted using SPSS 11.5.

4.4 Results

4.4.1 Respondents

Six hundred and seventy-five teachers responded to the questionnaire (24% of the total number of teachers). Three hundred and thirty-three teachers in secondary education (26% of the total number of teachers) and 342 teachers in higher education (24% of the total number of teachers) completed the questionnaire. A total of 119 (4%) of the teachers filled in the non-response form. In secondary education, 32 teachers filled in the form, indicating as the main reason: 'lack of time' (n=12) or 'other reason', which ranged from 'personal circumstances' to 'not teaching in the higher grades'. In higher education, 87 teachers filled in the non-response form and their main reasons for not responding were 'other reason', which ranged from criticism on the questionnaire to not speaking Dutch (n=46). An overview of the response is given per group of teachers in Table 4.3.

Table 4.3

Response to Questionnaire in Secondary and Higher Education

	Secondary education teachers	University teachers
Questionnaires sent	1290	1422
Completed questionnaires	333 (26%)	342 (24%)
Non-response form	32 (2%)	87 (6%)
Total response	365 (28%)	429 (30%)

The mean age of the entire group of teachers was 45.2 years (*SD=10.9; min-max 22-66*) and the average number of years of experience as a teacher was 17.9 years (*SD=11.5; min-max 0-44*). The mean age (*M*) of the teachers in secondary education was 46.5 years (*SD=9.6; min-max 22-66*). We compared this to the mean age of all secondary education teachers in the Netherlands in 2004 (data from Cfi12), which was 47.7. The average age of the teachers in our sample was somewhat younger than the mean age of all teachers in the Netherlands. The average number of years experience was 20.2 years (*SD=10.6; min-max 1-44*). The average number of years of experience for all secondary education teachers in the Netherlands was 20.6 years, which hardly differed from the mean number of years of experience in our sample.

[12] The CFi is an institute connected to the Ministry of Education, Culture, and Science in the Netherlands, and provides qualitative and quantitative data about schools.

The mean age (*M*) of the university teachers in our sample was 43.5 years (*SD=11.8; min-max 23–65*). The mean age of the total population of teachers at Leiden University was 44.5 years in 2004. The teachers in our sample were on average younger than those in the total population of teachers at Leiden University. The average number of years experience (*M*) in teaching at university was 15.7 years (*SD=11.9; min-max 0–42*). We did not have data on the average number of years experience in the total population of teachers at Leiden University.

The differences between the two groups of teachers in our sample concerning age and experience were significant. An overview is given in Table 4.4 of the general characteristics of the teachers from secondary education and from university.

Table 4.4

General Characteristics of teachers in secondary and higher education

Characteristics	Categories	SEd	HEd
Gender	Male	213 (64)	214 (62.4)
	Female	117 (35.1)	125 (36.4)
Previous Education	Ph.D.	33 (9.9)	228 (66.5)
	Master's	217 (65)	110 (32.1)
	Higher Professional Education	79 (23.7)	-
Teaching Certification	Grade-one teaching qualification (university level)	252 (75.4)	
	Grade-two teaching qualification (HPE level)	19 (5.7)	
	Grade-one secondary teaching certificate (MO-A)	5 (1.5)	
	Grade-two secondary teaching certificate (MO-B)	45 (13.5)	
	No formal qualification	11 (3.3)	
Pedagogical training	No		207 (60.3)
	Yes		129 (37.6)

4.4.2 Descriptive statistics, scale construction, and reliability scales

Descriptive statistics on the individual items (frequencies, means, standard deviation, and missing values) showed that some items from the questionnaire were problematic. The mean scores on these items were above 6.0 on a 7-point scale and the standard deviation was below .80. Based on these statistics, 9 items were removed and not used in the rest of the analyses (2 items from goals of education, 4 items from learning process, and 3 items from students). Based on, among other things, boxplots some respondents with extreme scores were removed because there was a chance that they would influence the outcomes of the different analyses (Tabachnick & Fidell, 2001); in secondary education, nine cases were removed and, in higher education 10 cases. Six hundred and fifty-seven cases were involved in the analyses; 324 teachers from secondary education and 333 teachers from higher education.

Scales were constructed using Principal Components Analyses. These scales are described below.

Goals of education. In the itemset (n=15) about goals, four components were found, which were interpreted as pedagogy, opinion, personal development, and knowledge building (see Table 4.5). Four items did not seem to fit in this solution (see section 3.4) and were removed. The four components can be explained as follows. Concerning the goal of education, teachers find it important to teach students respect for others and to educate students. The teacher clearly sees it as his or her task to play a role in the educational process of the student. For teachers the goal of opinion is about helping students to develop a critical attitude to the material to be studied. For university teachers, this may be understood as an academic attitude, a critical view on everything that is happening in the discipline. Personal development is about using talents, and using the qualities of students. It is important for the teacher to stimulate the personal development of students. Finally, the goal of knowledge building is about building up a basic amount of knowledge; it is important to the teacher that the learner has a certain minimum amount of knowledge. Items with a loading of .67 or higher on a certain component were grouped into scales. The reliability of the scales was .67 (alpha) and higher, and was considered sufficient.

Table 4.5

Principal Components Analysis on part I of the questionnaire: Goals of Education (originally 15 items)

	Component			
	1	2	3	4
	Pedago-gy	Opinion	Personal develop-ment	Acquiring knowledge
I find it important to discuss norms and values with students.	**0.84**			
I aim to educate students.	**0.84**			
I find it an important goal of my teaching to teach students respect for each other.	**0.81**		0.26	
I aim to achieve with my lessons that students can formulate an opinion on the learning material.		**0.84**		
I think it is an important goal of my teaching that students can judge the content of the subject matter.		**0.79**		
I aim to stimulate students to discuss the learning material.		**0.76**		
I aim to achieve in my teaching that students grow in directions they are good at.	0.32		**0.79**	
I think it is an important goal of my teaching that students use the qualities they have to the full.	0.37		**0.74**	
I think it is important to stimulate students with talent for my subject to develop further.			**0.68**	0.29
I aim to achieve in my lessons that students acquire basic knowledge of my subject.				**0.86**
I aim to achieve in my teaching that students acquire a certain amount of knowledge.				**0.82**
Alpha	0.82	0.74	0.68	0.67
% of Variance	31%	17%	12%	9%
Total				70%

Beliefs about the learning process. In the itemset (n=35) about the learning process two components were found, which were interpreted as acquiring knowledge and change (see Table 4.6). Twelve items did not seem to fit in this solution and were removed from the analysis. The two components can be interpreted as follows. Teachers who see 'learning' as acquiring knowledge find that students have to learn a basic package of knowledge and skills. This includes

applying skills and structuring knowledge, for instance, by summarizing the learning material and paying attention to the outline. Teachers who believe learning is changing see learning as being related to understanding of the material, which changes students' views on reality and on themselves.
A student does not merely acquire knowledge, but because he or she knows more, his or her knowledge changes. Learning is seen as something unexpected, and making discoveries is characteristic of learning. Items with a loading of .45 or higher on one of the components were grouped into scales. The reliability of the scales was .65 (alpha) and higher, and was considered sufficient.

Table 4.6
Principal components Analysis on items from part II of the questionnaire: Learning Process (originally 35 items)

	Component 1 Knowledge building	2 Change
I see learning as acquiring knowledge of the subject.	**0.70**	
A learner has really learnt when he / she knows the facts.	**0.69**	
A learner has really learnt when he / she has made himself / herself familiar with a set of knowledge and skills.	**0.62**	
A learner has really learnt when he / she can get the basic idea from the learning material.	**0.58**	
I see learning as taking in knowledge.	**0.57**	
Learning is acquiring a standard set of knowledge and skills.	**0.57**	
Learning a subject has a logical order.	**0.57**	
A learner has really learnt when he / she has practiced with parts of the subject.	**0.57**	
Learning is practicing skills belonging to a subject.	**0.56**	
I think it is important that students know the basic parts of my subject before we can go on with new parts.	**0.54**	
Learning is summarizing the learning material.	**-0.52**	
Learning is understanding the theories.	**0.52**	
A learner has really learnt when he / she understands the theories.	**0.51**	
Learning is always aimed at a goal.	**0.47**	
Learning is a process with predetermined steps.	**0.46**	

Tabel 4.6 ***continued***

I see learning as changing one's view on life.		**0.79**
In learning the student changes his / her view of himself / herself.		**0.76**
A learner has really learnt when he / she changes his / her view on life.		**0.74**
In learning your perspective on reality changes.		**0.73**
Learning is making connections between the subject matter and the world around you.		**0.65**
I see learning as noticing unexpected things.		**-0.64**
A learner has really learnt when he / she has made discoveries for himself / herself.		**0.55**
In learning you sometimes make discoveries you did not consciously aim for.		**0.46**
Alpha	0.78	0.65
% of total variance	23%	14%
Total		38%

Beliefs about students. In the itemset (n=20) about students, three components were distinguished, which were interpreted as differences between students, expectations about students, and capacities of students (see Table 4.7). Six items did not appear to fit well with these three components and were subsequently removed from the questionnaire. The three components can be summarized as follows. Teachers who value differences between students aim to take these differences into account. The component expectation of students was difficult to interpret since some items loaded negatively on this component: teachers do not seem to count on activity of students during class or in preparation of class; they do expect students to ask questions and to find learning material themselves, or to start a discussion themselves. The third component is related to the capacities of students and the importance of these capacities. In this component the belief was found that there is more talent amongst students than they often realize themselves, and that this talent needs to be discovered. Items with a loading of .49 or higher on one of these three components were grouped into scales. The reliability of the scales was .73 (alpha) or higher, and was considered sufficient.

Table 4.7

Principal Components Analysis on items from part III of the questionnaire: Students (originally 20 items)

	Component 1 differences	2 expectations	3 capacities
I aim to take the differences between individual learners into account.	**0.77**		
I think it is important to take account of the differences between classes.	**0.75**		
I think it is important to make a distinction between different groups of learners.	**0.72**		
I think it is important to anticipate the different ways of learning of students.	**0.71**		
I assume that every student experiences education in his / her own way.	**0.52**		
I count on students to be active during the lesson.		**-0.74**	
I count on students' coming up with questions about the learning material.		**0.73**	
I expect students to prepare for the lesson.		**-0.71**	
I count on students to come up with material for the lesson.		**0.65**	
I assume that students know what they want to learn.		**0.5**	
I think it is important that students start a discussion themselves.		**0.5**	
Students can do a lot more than I sometimes think.			**0.86**
I am often surprised by what students can do.			**0.80**
Students are much more talented than they think.	0.20		**0.72**
Alpha	0.76	0.73	0.76
% of Variance	26%	15%	10%
Total			51%

*Regulation.*In the itemset (n=51) about regulation, three components were distinguished, which can be interpreted as shared regulation, strong regulation, and loose regulation (see Table 21). A considerable number of items, 29, did not fit the solution and were removed from the analysis. The three components can be summarized as follows. Teachers who find shared regulation most appropriate to describe their own practice often consider the approach to learning and reflection on the learning process together with the students. Some items in this component stress the function of the teacher of giving examples of how a difficult text can be broken down into parts or how information should be retrieved. Shared regulation is often related to regulative activities like reflection and approach to the learning process. Loose regulation is practiced by teachers who let students do many things themselves, like settling down to work, preparing work, and discovering their own learning style and getting the freedom

to do so. In this component, as in shared regulation, regulative activities are important, like preparing for learning and discovering one's learning style. The component strong regulation is characterized by items related to regulation by the teacher mainly in cognitive activities, like transferring knowledge, and explaining difficult material. Items with a loading of .44 or higher on one of these three components were grouped into scales. The reliability of the scales was .71 (alpha) and higher, and was considered sufficient.

Table 4.8
Principal components Analysis on items from part IV of the questionnaire: Regulation (originally 51 items)

	1	2	3
	Shared regulation	Loose regulation	Strong regulation
I give students advice about making summaries.	**0.68**		
Together with the students, I reflect on the outcomes of learning.	**0.68**		
Together with the student, I consider what his / her best way of learning is.	**0.66**		
I vary my lessons to take account of the different learning styles of students.	**0.64**		
I show students how a difficult text can be broken down.	**0.63**		0.24
Together with the students I plan the route to the ultimate goal.	**0.63**		
I show students how to search to find the necessary information.	**0.62**		
I think of the interests of students and offer them material which is relevant to those interests.	**0.61**		
I give students more and more room to work independently.	0.22	**0.74**	
I let students work more and more independently.	0.26	**0.72**	
Students are given an increasing amount of freedom to decide how they study the material.		**0.71**	
Students take an increasing amount of responsibility for their own learning process.	0.25	**0.68**	
Students start working themselves for my subject.		**0.55**	
Students discover themselves how they learn best.		**0.52**	
Students are themselves motivated to participate in my lessons.		**0.49**	
Students treat fellow-students with respect.		**0.46**	
Students prepare the lessons independently.		**0.44**	

Table 4.8 *continued*

I explain the learning material clearly.			**0.76**
I pass my knowledge on to students.			**0.73**
I explain difficult material to students.			**0.63**
I give the main points of the material to the students.	0.21		**0.61**
I decide what students have to learn.			**0.6**
Alpha	0.81	0.78	0.71
% of Variance	20%	13%	10%
Total			43%

The number of items per scale, the mean scores (M), their standard deviations (SD), and the internal consistency (Cronbach's alpha) of all 12 scales are given in Table 4.9. These were taken into account in the analysis.

Table 4.9

Mean scores (M), Standard deviation (SD), and Cronbach's alpha (a) for the scales from the questionnaire

Scale		N	M	SD	α
Goal	Knowledge Building	2	6.0	.83	.67
Goal	Opinion	3	5.6	.94	.73
Goal	Pedagogy	3	4.6	1.4	.82
Goal	Development	3	5.7	.86	.68
Learning Process	Acquiring Knowledge	15	4.7	.62	.78
Learning Process	Change	8	4.8	.68	.65
Students	Differences	5	5.1	.85	.76
Students	Expectations	6	3.7	.48	.73
Students	Capacities	3	4.5	1.0	.76
Regulation	Shared	8	2.8	.74	.81
Regulation	Learner	9	3.2	.59	.78
Regulation	Teacher	5	3.9	.63	.71

N.B. The items on goals, learning process, and student scales were all scored on a 7-point scale.
N.B. The items on the three regulation scales were all scored on a 5-point scale.

4.4.3 Similarities and differences between secondary and university teachers' perspectives

To consider more specifically the similarities and differences between teachers in secondary and higher education, an independent samples T-test was performed on the scales which resulted from the Principal Components Analysis described above (section 4.2). The results of this analysis show that secondary and university teachers did not score significantly differently on the following scales: acquire knowledge, expectations of students, strong regulation, and loose regulation. Teachers share the same views on the importance of knowledge building: they find it important that students increase their knowledge and learn to structure it, for example, by making summaries. Furthermore they have similar expectations of students regarding active participation during lessons and, for example, about their contribution of material to the lessons. Secondary and university teachers attach similar importance to strong and loose regulation during lessons. It is remarkable that both groups of teachers scored higher on strong than on loose or shared regulation. Especially considering the accent in secondary education on active and self-regulated learning, in which the transfer of regulation to the learner is considered highly important, one would expect a lower score on strong regulation and a higher score on loose and shared regulation.

The outcomes of this analysis indicate that there are significant differences between secondary and university teachers in the knowledge building, opinion, education, and personal development scales, in the change scale, in the differences and capacities scale, and in the shared regulation scale. These differences are represented in Table 4.10:

Table 4.10

T-test with scale scores for SEd and HEd teachers

Scales	M (SEd)	SD	M (HEd)	SD	Sig. 2-tailed
Goals					
Knowledge building	6.1	.70	6.0	.74	.026*
Opinion	5.4	.89	5.9	.76	.000***
Education	5.4	.91	3.8	1.2	.000***
Development	5.8	.67	5.6	.90	.000***
Learning Process					
Acquiring knowledge	4.8	.61	4.7	.59	.130
Change	4.9	.58	4.7	.72	.000***

Tabel 4.10 *continued*

Students					
Differences	5.3	.73	4.8	.84	.000***
Expectations	3.7	.44	3.8	.48	.055
Capacities	4.9	.94	4.1	.96	.000***
Regulation					
Teacher regulation	3.9	.58	3.9	.62	.266
Shared regulation	3.0	.70	2.7	.74	.000***
Learner regulation	3.2	.57	3.2	.58	.093

*p<.05, **p<.01, ***p<.001.

Significant differences were found between the two groups of teachers regarding goals. For teachers in higher education, the goal opinion is important, which is about acquiring a critical attitude towards one's discipline. Teachers in secondary education, however, stress the education of students. This is more a pedagogic goal in which teaching norms and values is of importance. Furthermore, they find the personal development of the individual student of great importance: the student should put most effort into what he or she is good at. Lastly, teachers in secondary education find knowledge building, the basis of knowledge and skills, more important than do teachers at university. Beliefs about the learning process involving change are more important for teachers in secondary education. This belief is about understanding the material, but also about the student changing as a person. Secondary education teachers scored higher than university teachers on the two scales about students in which secondary and university teachers differed significantly, namely, differences and capacities, secondary education teachers score higher than teachers from university. The scale differences related, for instance, to the different learning styles of students, and the scale capacities concerned learners being able to do more than they think they can. Finally, there was a difference in the shared regulation scale, on which, again, teachers in secondary education scored higher. This indicates that teachers in secondary education find it more important to determine an approach to learning or to evaluate the learning process than do teachers at university.

Considering that the sample of this study was rather large, the relatively small differences between the scale scores of secondary and university teachers are significant. To identify those scales which make the most important distinction between the two groups of teachers, we performed a discriminant analysis. The discriminant analysis was performed with the 12 scales (see above) as predictors and 'membership' of SEd or HEd as grouping variable. The contribution of every scale score to the discriminant function was considered. To come to as

parsimonious a solution as possible, the scales which contributed little to nothing to the prediction of membership were removed step by step (Tabachnick & Fidell, 2001).

Three scales were taken into account in the final analysis: goal: education, goal: opinion, and students: capacities. A discriminant function was calculated for these scales using Chi-square (3) =477.511, p<.01. This indicates that these three scales distinguished sufficiently between the two groups of teachers. The table with the canonical correlations between the predictors (scale scores) and the discriminant function indicates that the best predictor for the differences between SEd teachers and HEd teachers is the scale goal: education, followed by the scale goal: opinion and students: capacities (see Table 4.11).

Table 4.11

Canonical correlation between the discriminant function and the opinion, education, and capacities scales

	Function 1
Goal; opinion	-.745
Goal; education	.906
Student; capacities	.294

Discriminant analysis indicated the classification results calculated using the discriminant function. Using the three scales mentioned above, it was possible to classify 85.3% of the cases correctly as SEd teacher or HEd teacher (see Figure 4.1). The scores of these three scales were decisive for the distinction between the teachers. In only 14.7% of the cases were teachers not assigned to the right group. In secondary education, 89% of the cases were classified correctly and in higher education 81.5% of the cases were classified correctly.

Teachers in secondary education appear to find the education of students, teaching them norms and values and respect, clearly more important than do teachers at university. Furthermore, these teachers have more confidence in the capacities of students. University teachers, on the other hand, find opinion forming by students a more important goal of their teaching. Students should learn to take a stand and be critical of, for instance, theories used in a discipline. This may also be translated into academic learning.

We used an independent samples T-test to investigate the characteristics of the groups of teachers who were not 'correctly' classified. It appeared that the teachers in secondary education who were classified as university teachers were on average younger (age=42,3) and had on average less experience (experience=16) than teachers 'correctly' classified as secondary education teachers (age=47; experience=21). These differences in age and experience were both significant (t=2.238 p<.05 for age and t=2.149 p<.05 for experience).

University teachers classified as secondary education teachers were on average older (age=47) and had more experience (experience=19) than the teachers 'correctly' classified as university teachers (age=43; experience=15).

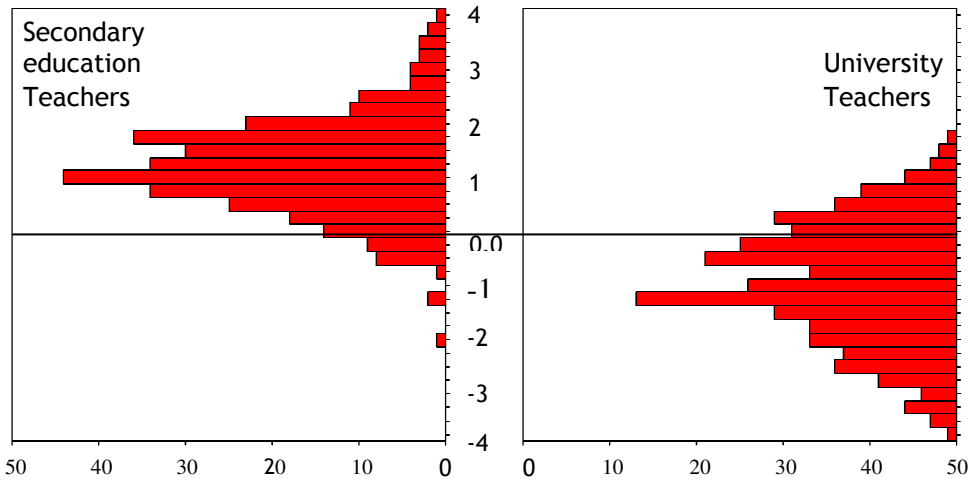

Figure 4.1

Prediction of teachers' membership of secondary education or university.
N.B. Teachers scoring above '0' on the discriminant function were classified as SEd teachers and those scoring below '0' were classified as HEd teachers

These differences in age and experience were also significant ($t=2.437$, $p<.05$ for age and $t=2.478$, $p<.05$ for experience).

4.4.4 Relation between independent variables and teachers' perspectives

We also investigated the relation between the independent variables gender, age, and experience in education and the scale scores using a correlation analysis (two-tailed).

Table 4.12

Correlation analysis (2-tailed) between gender, age, and experience in education and the scale scores

Scales		Gender	Age	Experience in education
Goal	Opinion	n.s.	n.s.	-.13**
Goal	Pedagogy	n.s.	.21**	.23**
Goal	Development	n.s.	.20**	.17**
Learning Process	Acquire Knowledge	n.s.	.13**	.16**
Student	expectations	-.09*	.12**	.09*
Student	Capacities	n.s.	.22**	.19**
Regulation	Teacher	-.10**	.11**	.12**
Regulation	Shared	n.s.	.08*	.10**

N.B. Only scale scores are mentioned which correlate significantly with gender, age, or experience in education.
*N.B. n.s. = not significant, *p<.05, **p<.01*

There were a number of significant correlations, which were, however, very small. The highest correlation found was .23 between experience in education and goal: education, which seems to indicate that the more experienced teachers are, the more important they find this goal. This finding is related to the composition of the groups; teachers in secondary education were on average older and scored on average higher on the scale education than did university teachers.

Furthermore, we found a correlation of .22 between age and capacity of students, which indicates that the older teachers are the more they trust in the capacities of students. This finding is, however, also related to the age and experience of teachers in secondary education and their higher score on average on the scale capacities of students compared to university teachers.

4.5 Conclusion en Discussion

In this section, we discuss the most important findings of this study and make some comments on the study in general. We first discuss the most important similarities between secondary and university teachers. The findings of the analyses of the items in the questionnaire show that 12 scales were distinguished, related to the themes goals of education, learning process, students, and regulation. The scores of the teachers from secondary education and from university on a number of these scales hardly differed. This concerns four scales: acquiring knowledge, expectations of students, strong regulation, and loose regulation. The importance teachers attach to acquiring knowledge and their expectations of students' efforts is similar for both groups. Furthermore, two

kinds of regulation, strong regulation and loose regulation, are of equal importance in both groups. Based on the findings of Boulton-Lewis (2004) and Entwistle and Walker (2000) we expected similarities between both groups, and based on the results we can confirm these similarities empirically.

A remarkable finding was that both groups of teachers scored higher on strong regulation than on loose and shared regulation. Considering that, especially in secondary education, the accent is on the self-regulated learning of students in which the transfer of regulation to the students is of great importance, one would expect a higher score on loose and shared regulation. A possible explanation can be found in a study by De Kock, Sleegers, and Voeten (2005), about the choices made by teachers in secondary education when designing learning environments. Teachers participating in the study indicated whether they found particular aspects of the learning environment typical of a traditional learning environment or of a 'new learning' environment. Strong regulation, described by de Kock et al. (2005) as "teacher steers learning process; learner executes learning process", p. 812), was one of the aspects the teachers thought appropriate for both new and traditional learning environments. According to De Kock et al., a possible explanation for this outcome is that it is difficult for teachers to change their beliefs about the traditional role of the teacher, since these beliefs are also deeply rooted in the school culture.

We also found a number of differences between the two groups of teachers on the following scales: knowledge building, opinion, education, personal development, and change, differences and capacities, and shared regulation. Teachers from secondary education scored higher on all scales, except on the opinion scale on which university teachers scored higher. Especially the scores on the education and opinion scales and the capacities scale showed a distinction between the two groups of teachers. In secondary education, education and personal development are of primary importance, while in higher education, acquiring a critical attitude in the discipline is considered important by teachers. Menges and Austin (2001) indicate in their chapter about Teaching in higher education a number of differences between university education and K-12 education. The first difference they indicate is related to the different goals strived for in each form of education. These goals are, however, not specified by the authors. In our study, goals accounted for the main difference between the two groups of teachers.

An interesting finding was that the teachers from secondary education classified as university teachers were on average younger and less experienced. This can probably be explained by the fact that they are closest to university education, where teachers in the Netherlands mostly receive their training in a discipline. University teachers classified as secondary education teachers were on average older and more experienced. This can be explained by the fact that older faculty members focus more on 'care' for students and have a renewed commitment to teaching in which contact with students is very important (Karpiak, 2000).

The Pearson correlation analysis showed, furthermore, that there was a small but significant correlation between the scale scores and the independent variables

gender, age, and experience in education. Our findings are in line with those of Lingbao and Watkins' (2001) study on teachers' beliefs about teaching in secondary education, which showed no clear relation between teachers' beliefs and their gender or experience in education.

In our study, a number of similarities and differences were found between teachers in secondary and higher education. It is unclear whether the instrument used was sufficient to measure the variation present. Since the questionnaire was designed for a very diverse population, we were forced to formulate the items in a very general manner. The respondent was asked to make a translation from every item to his or her own practice. Moreover, teachers were asked to give a total judgment over their entire teaching practice. It is likely that teachers in secondary education would fill in the questionnaire differently if they had a specific class in mind. The same counts for university teachers, who have to contend with large differences between different years and forms of education. One suggestion for future research is to have teachers fill in the questionnaire with a specific class, or group and situation in mind.

Another point is that we sent the questionnaire to teachers from one university. It is possible that teachers from a university with an explicit educational concept, like problem-based learning, would respond differently to a number of the scales than teachers from universities without an explicit educational concept. This is another possible point of investigation in a future study; to compare the perspectives of teachers from different universities and to explore the influence of an educational concept.

5

The relation between discipline and teachers' perspectives on self-regulated learning

Abstract

The relation between secondary and university teachers' perspectives on self-regulated learning and their school subject or discipline was central to this study. A questionnaire was developed to investigate teachers' perspectives on self-regulated learning in upper secondary education and at university. The questionnaire was completed by 675 teachers from different disciplines. Three perspectives were identified, which were described as 1) development oriented and teacher and student regulation, 2) knowledge oriented and teacher regulation and 3) opinion oriented and student regulation. One dimension, 'hard'-'soft' from Biglan's typology of disciplines, was used to categorize both school subjects and disciplines. Soft disciplines and school subjects scored significantly higher on the first and third perspectives. A further distinction was made for the university teachers in hard-pure, hard-applied, soft-pure, and soft-applied disciplines. Teachers from soft-pure disciplines scored significantly higher on the first perspective.

5.1 Introduction

Research in both secondary and university education has shown that teachers teaching similar subjects share certain beliefs and norms which are influenced partly by the (academic) discipline in which they have been socialized (e.g., Grossman & Stodolsky, 1995). Different beliefs of teachers may for instance influence the degree to which teachers feel free to teach certain content or use certain instructional techniques. Therefore, these researchers argued that knowledge of differences between school subjects and their possible influence on teachers are crucial in the context of reforms.

A study by Boulton-Lewis, Smith, McCrindle, and Campbell (2001) in secondary education, indicated that teachers with subjects where there is an established knowledge base and set of skills (e.g., second language teaching) are more likely to adopt a conception of teaching as transmission of content and skills and learning as acquisition and reproduction of content and skills. Whereas teachers with a subject where the emphasis is on the development of the person as a whole and attitudes, and where the subject is more open to individual interpretations (e.g., Art, Literature), are more likely to adopt a conception of teaching as transformation of students (Boulton-Lewis, Smith, McCrindle, Burnett, & Campbell, 2001). This seems to indicate that the nature of knowledge in a discipline is related to the perspectives teachers working in this disciplines have.

We explored secondary and university teachers' perspectives on self-regulated learning with the aim of relating these perspectives to the disciplines13 they taught. According to Fullan educational change is for each teacher a highly personal experience (Fullan, 1991). Teachers' perspectives on the ideas in an innovation play an important role, since some perspectives of teachers can be more in line with the ideas of an innovation than others. The study was performed in the Netherlands, where recent innovations in secondary education aimed to improve the transition from secondary to higher education by introducing, partly, new content of the school subjects, but also a new educational concept. Self-regulated learning for students was introduced; this implies a focus on the regulation of the learning process by the students and a gradual transfer of control from the teacher to the student (Vermunt & Verschaffel, 2000). If teachers are to fulfil their new roles; it is crucial that their conceptions of self-regulated learning are in line with the innovation. Moreover, if the conceptions and related practices of secondary and university teachers should be in line to facilitate students' transition from secondary school to university, it is important to know what the similarities and differences are between secondary and university teachers' conceptions. Given the studies mentioned earlier, we expected to find differences between teachers of different disciplines and their conceptions on self-regulated learning.

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[13] In the following, we will use the word 'discipline' to refer to both school subjects in secondary education and disciplines in higher education. We will only use 'school subjects' if we discuss (research in) secondary education.

5.2 Research on differences between disciplines

Research indicates that there are important differences between disciplines which are a 'key organizer of teachers' professional lives and serve as a filter through which teachers (Grossman & Stodolsky, 1994, p.181), for example, approach innovations (Grossman & Stodolsky, 1995), choose a certain teaching approach or method (Lueddeke, 2003; Neumann, 2001). Below, we discuss both strands of research on the differences between school subjects in secondary education and between disciplines at university.

In secondary education, differences between school subjects were examined, for instance, by Stodolsky and Grossman (1994, 1995) and De Brabander (1993). Grossman and Stodolsky (1995) defined three features of school subjects: status, perceived sequentiality, and scope. School subjects differ in the status they have in the school and in the larger community. Sequentiality is perceived as important in subjects where certain knowledge and skills have to be known before students can continue in the following semester, for instance, the French language, where students have to know some words and grammar before they can read texts. The scope of the subject refers to the different disciplinary areas included in the subject, which can be broad or restricted. An example of a broad-scope subject is social studies, which draws on disciplines like history, political science, and geography. In a survey study among 399 teachers of 5 different subjects (mathematics, English, science, social studies, and foreign languages), Grossman and Stodolsky found that maths and foreign language teachers scored significantly higher on sequentiality than did teachers of English, science, or social studies. They also found that maths and English teachers considered their subjects to be significantly more defined or restricted in scope than the other teachers in the sample.

In a study by De Brabander (1993), subject conceptions of secondary school teachers were explored, which revealed different dimensions on which school subjects could be placed, like personally versus socially relevant, indirectly versus directly usable, specifically versus generally applicable, and soft versus hard. De Brabander investigated two groups of teachers; one group of teachers (pre-university education) distinguished between three types of school subjects: "a group of socially relevant, academic subjects in which objective knowledge is conveyed (e.g. mathematics) and a group of personally relevant subjects in which subjective, everyday knowledge is conveyed (e.g. religious education); and an intermediate group of subjects in which the knowledge that is conveyed is academic, yet relatively subjective and is not exclusively personally or socially relevant (e.g. history)" (De Brabander, 1993, p.99).

Much research has been done in higher education to measure the differences between disciplines (Braxton & Hargens, 1996). A characterization of disciplines often used was developed by Biglan (1973a, b), who, based on empirical research, drew a distinction, between disciplines on three dimensions. Firstly, he found differences in the degree to which one paradigm exists in a discipline (hard-soft). In defining paradigm he followed Kuhn, who refers to "a body of theory which is subscribed to by all members of a field" (Biglan, 1973,

p.201). For disciplines with one important paradigm, there is more consensus about method of study and content (e.g., physics) than in disciplines without a single paradigm (e.g., humanities). Secondly, Biglan distinguished disciplines based on their degree of concern with application (pure-applied). Some disciplines, like education or engineering, are more concerned than others with application to practice. Finally, a distinction was drawn between disciplines concerning biological or social areas and those that are concerned with inanimate objects (life - non-life).

Becher (1989) modified Biglan's typology and distinguished disciplines on the basis of the first two dimensions, which resulted in four types of disciplines: hard-pure, hard-applied, soft-pure, and soft-applied. In each of these disciplinary groupings there is a different view on the nature of knowledge. The main differences between the disciplines are described for different types of disciplines in Table 5.1. This distinction between disciplines can only be used in a broad, generalizing manner. As Becher and Trowler indicate, "To allocate disciplines to domains…may be acceptable at a broad, general level of analysis, but could prove seriously misleading when subjected to closer and more detailed examination (Becher & Trowler, 2001, p.39)".

Table 5.1

Knowledge and disciplinary grouping (adopted from Becher, 2001, p. 36)

Disciplinary groupings	**Characteristics in the objects of enquiry**	**Nature of knowledge growth**	**Relationship between the researcher and knowledge**	**Enquiry procedures**	**Extent of truth claims / criteria for making them**	**Results of research**
Pure sciences (e.g. physics): 'hard-pure'	Concerned with universals, quantities, simplification;	Cumulative; (crystalline, tree-like);	Impersonal, value-free;	Clear criteria for knowledge verification and obsolescence	Consensus over significant questions to address, now and in the future;	Results in discovery / explanation
Humanities (e.g. history) and pure social sciences (e.g. anthropology): 'soft pure'	Concerned with particulars, qualities, complication	Reiterative; (organic / river-like)	Personal, value-laden	Dispute over criteria for knowledge verification and obsolescence	Lack of consensus over significant questions to address	Results in understanding / interpretation
Technologies (e.g. mechanical engineering, clinal medicine): 'hard-applied'	Concerned with mastery of physical environment	Purposive; pragmatic (know-how via hard knowledge)	Applies heuristic approaches	Uses both qualitative and quantitative approaches	Criteria for judgment are purposive, functional	Results in products / techniques
Applied social science (e.g. education, law, social administration 'soft-applied'	Concerned with enhancement of semi-professional practice	Functional; utilitarian (know-how via soft knowledge)		Uses case studies and case law to a large extent		Results in protocols / procedures

This typology has been used in various studies (for an overview, Braxton & Hargens, 1996). Neumann, Parry, and Becher (2002), for example, investigated the relation between disciplines and curriculum, assessment, main cognitive purpose, group characteristics of teachers, types of teaching method, and learning requirements for students. They found a difference in curriculum between hard and soft disciplines, the first tending to be 'linear' and 'hierarchical', while the latter could be characterized as 'spiral'. Another distinction between disciplines can be found in the group characteristics of teaching. For example, teachers in hard disciplines often spend less time on the preparation of courses since the content is more or less straightforward, while teachers in soft disciplines spend much more time on preparation since the subject matter is open to 'interpretation and debate'.

We used the Biglan / Becher dimensions both for school subjects and for disciplines. We realize that there are important differences between school subjects and disciplines; however, as Grossman and Stodolsky suggested, "perhaps high school teachers are more similar to professors, in terms of subject-matter affiliations and departmental subcultures, than we have previously thought. If so, then research on high schools could draw from work in higher education." (Grossman & Stodolsky, 1994). We also assumed important connections since the content of many school subjects is generated in university disciplines and school teachers, in the Netherlands, are trained in a specific university discipline. The distinction between hard and soft is one which was also found in a study on subject conceptions in secondary education (De Brabander, 1993). We realize that most school subjects have an applied aspect and, therefore, only used the hard-soft distinction to categorize school subjects and disciplines.

5.3 Research on the relation between discipline and approaches to teaching

Only quite recently, a few studies have specifically investigated the influence of discipline on teacher's approaches to teaching, defined in terms of the strategies adopted for teaching and the underlying intentions (Trigwell & Prosser, 2004). Lueddeke (2003) and Lindblomm-Ylänne, Trigwell, Nevgi and Ashwin (2006) examined the relationship between different disciplines and teaching approaches. They found a significant relationship between the faculty and the dominant approach to teaching. In both studies, disciplines were divided into groups according to Biglan's (1973a, b) division of disciplines: hard (for example, mathematics, physics) and soft (for example, languages, law) disciplines. In both studies, the Approaches to Teaching Inventory (ATI) was used, which measures teachers' intentions and strategies to teaching and was developed by Trigwell and Prosser (2004). This inventory consists of 16 items divided over two scales. The Information Transmission /Teacher Focus scale (ITTF) contains items in which the focus of transmission is on facts and skills; students are not assumed to be active, they learn by receiving the transmitted material and the teachers is central. In the conceptual change / student focus scale (CCSF), items are student-focused and the teacher aims at changing students' conceptions of the world or of phenomena they are studying. Students are assumed to construct their own knowledge (Trigwell & Prosser, 2004). The findings of Lindblomm-Ylänne et al. (2006) indicated that, in particular, the Conceptual Change/Student Focus scale was scored significantly higher by teachers from the soft disciplines than by teachers from the hard disciplines, whereas teachers from hard-applied disciplines scored significantly higher on the Information Transmission/Teacher Focus scale. Lueddeke's study showed similar results, namely, that teachers from hard-pure or hard-applied disciplines are more likely to have an ITTF orientation while teachers in soft-pure or soft-applied disciplines are more likely to have a CCSF orientation.

5.4 Teachers' perspectives

Teachers' perspectives have long been the subject of research. Pajares (1992) summarizes this research in his review and notes that an important impediment is the lack of clear definitions, the difficulty of distinguishing beliefs from knowledge, and the difficulty of measuring beliefs (Kagan, 1990). We followed the conceptualization of perspectives by Pratt (1992, 1998), who views perspectives as an inter-related set of intentions, beliefs that give direction and justification to teachers' actions. Intentions refer to what a teacher aims to accomplish, and beliefs refer to why intentions and actions are considered to be important, reasonable, and justifiable. Perspectives are described as follows:

"Specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world (Pratt, 1992, p. 204)."

Perspectives and conceptions are used as identical terms by Pratt. In his own study Pratt interviewed 253 educators, in adult and higher education, about teaching, which resulted in the description of five perspectives on teaching. Each conception comprises the three aspects of intentions, beliefs, and actions. Evidence was found in the interviews that teachers can have more than one perspective; most teachers have one dominant perspective (Pratt, 1998).

Teachers' perspectives have been investigated in both secondary and higher education. Boulton-Lewis (2004) compared these studies and concluded that in most studies at schools and universities the same or strongly related conceptions were found, namely, conceptions focused either on the teacher and the content or on the students and learning. Comparisons have been made based on the results of different studies, for example, by Boulton-Lewis et al. (2001), but up till now, secondary and university teachers' conceptions have not been investigated in one empirical study.

Research questions.
Our main aim was to examine secondary and university teachers' perspectives on self-regulated learning and to investigate the relationship between these perspectives and the disciplines in which the teachers worked. The following questions were central:

- *What are the perspectives of secondary and university teachers on self-regulated learning?*
- *What is the relation between the teachers' discipline and their perspectives?*
- *What is the relation between the teachers' gender, age, experience, and previous education and their perspectives?*

5.5 Method

5.5.1 Instrument

In preparation for the large-scale survey reported in the present chapter, we held an explorative interview study with 37 teachers from both secondary and higher education, in order to describe the diversity in teachers' perspectives and to understand teachers' 'natural' language with respect to this phenomenon. For the analysis of the interviews, a code scheme was developed consisting of themes we identified in the interviews. A closed questionnaire was developed, based on the four themes identified in the interviews: goals of education, learning process, students, and regulation. Representative quotations from the interviews were used to formulate the items (for examples of items, see Chapter 4, section 3.1). A more elaborate description of the interview study can be found in Chapter 2 and 3. Two versions of the questionnaire were developed: one for teachers in secondary education and one for teachers in higher education. The content of the items was identical; however, we made distinctions at word level. In the version for secondary education, for example, we used the word pupil, while in versions for university we used the word student. Here, we use the word questionnaire in the singular, but we always refer to the two versions.

We undertook a pilot study of this first version of the questionnaire, which consisted of 130 items, among secondary teachers (n=33) and university teachers (n=39). The teachers were asked to answer the items and were given the opportunity to comment on the questionnaire in an enclosed form. The pilot served to investigate the quality of the items, taking into account the comments of the teachers and the descriptive statistics for each item. Based on these data, nine items were removed and ten items were reformulated.

The final questionnaire consisted of 121 items divided over four parts. In the final version, a 7-point Likert scale, which ranged from 'totally disagree' to 'totally agree', was used for the first three parts of the questionnaire, dealing with goals of education, learning process, and students. In the last part, on regulation, we used a 5-point Likert scale which ranged from 'almost never applies' to 'almost always applies' (see Appendix 1 for an example of the items).

5.5.2 Sample

The questionnaire was sent in May 2004 to a total of 2712 teachers from upper secondary education and university. In secondary education, 1290 questionnaires were sent to 57 schools. In higher education, 1422 questionnaires were sent to all teachers from one university. In addition to the questionnaire, a form was supplied on which teachers could indicate the reason for not responding. Four reasons for non-response were provided: 1) I have no time to respond to the questionnaire; 2) I never respond to questionnaires; 3) I no longer teach; and 4) I already completed the questionnaire in the pilot study; as well as 5) other reason.

Six hundred and seventy-five teachers responded to the request to fill in the questionnaire (24% of the total number of teachers). In secondary education, 333 teachers (26% of the total number of secondary teachers) filled in the

questionnaire and in higher education 342 teachers (24% of the total number of university teachers). One hundred and nineteen teachers (4%) filled in the non-response form. In secondary education, 32 teachers filled in the non-response form, with as the most important reason, 'lack of time'. In university education, 87 teachers filled in the non-response form, with as the most important reason, 'other reason', which ranged from criticism of the questionnaire to not speaking Dutch. An overview of the response per group of teachers is given in Table 4.3 in Chapter 4.

The mean age of the entire group of teachers was 45.2 years (*SD=10.9; min-max 22-66*) and the average number of years of experience as a teacher was 17.9 years (*SD=11.5; min-max 0-44*). The mean age (*M*) of the teachers in secondary education was 46.6 years (*SD=9.6; min-max 22-66*) and the average number of years of experience was 20.3 years (*SD=10.6; min-max 1-44*). The mean age (*M*) of the responding university teachers was 43.7 years (*SD=11.8; min-max 23–65*). The average number of years of experience (*M*) in teaching at university was 15.7 years (*SD=11.9; min-max 0–42*). In Table 5.2 the characteristics of the teachers can be found, such as gender, characterization of the discipline (according to Biglan's division), previous education, and pedagogical training.

Table 5.2

Characteristics of secondary and university teachers

Characteristics	Categories	SEd	HEd
Gender	Male	213 (64%)	214 (62.4%)
	Female	117 (35.1%)	125 (36.4%)
Previous Education?	Ph.D.	33 (9.9%)	228 (66.5%)
	Master	217 (65%)	110 (32.1%)
	Higher professional education	79 (23.7%)	-
Teaching Certification (for SEd)	Grade-one teaching qualification (university level)	252 (75.4%)	
	Grade-two teaching qualification (HPE level)	19 (5.7%)	
	Grade-one secondary teaching certificate (MO-A)	5 (1.5%)	
	Grade-two secondary teaching certificate (MO-B)	45 (13.5%)	
	No formal qualification	11 (3.3%)	
Pedagogical Training (for HEd)	No		207 (60.3%)
	Yes		129 (37.6%)
School Subject (for SEd)	Hard (e.g., mathematics)	125 (36.6%)	100 (30.2%)
	Soft (e.g., English language)	190 (58.6%)	231 (69.8%)
Discipline (for HEd)	Hard-pure (e.g., mathematics)		68 (20.5%)
	Hard-applied (e.g., computer science)		32 (9.7%)
	Soft-pure (e.g., English language and literature)		170 (51,4%)
	Soft-applied (e.g., education)		61 (18,4%)

To compare the relation between different disciplines and teachers' perspectives, we used Biglan's division of disciplines into hard-pure, hard-applied, soft-pure, and soft-applied. At Leiden University, each faculty consists of one or more disciplines, and each discipline was put into one of the four categories (see also Table 5.3 and 5.4).

Table 5.3

Biglan's typology applied to Disciplines at Leiden University

Task area	Hard	Soft
Pure	Astronomy Chemistry Mathematics Physics Biology	African Languages and Cultures Arabic Language and Culture Art history China, languages and cultures of Classics Comparative Indo-European Linguistics Dutch Language and Culture Dutch Studies Egyptian Language and Culture English Language and Culture French Language and Culture General, Comparative and Intercultural Literature German Language and Culture Hebrew and Aramaic Languages and Cultures History Italian Language and Culture Japan, Languages and cultures of Korea, Languages and Cultures of Latin America / Spanish, Languages and cultures of Linguistics Mesopotamia and Anatolia, Languages and cultures of Persian Language and Culture Russian Studies Slavic Languages and Cultures South and central Asia, languages and cultures of Southeast Asia and Oceania, languages and cultures of Turkish language and culture Archeology Theology World Religions Philosophy Psychology Political Sciences Cultural Anthropology
Applied	Computer Science Bio-Farmaceutical Sciences Environmental studies Life Science & Technology Sustainable Molecular Science & Technology Medicine Biomedical Sciences	Law Education Public Administration

For the school subjects we only used the hard-soft distinction, for reasons mentioned earlier (see also Table 5.2 and 5.4).

Table 5.4

Biglan's 'Hard-Soft' dimension applied to school subjects in Dutch secondary education

	Subjects in Secondary Education
Hard	Chemistry Physics Biology Mathematics General science
Soft	Dutch English French German Classical languages Culture and the Arts Classical Culture History Social studies Geography Economy
Other	Music Movement education Drawing Religious Education

5.5.3 Procedure

The teachers in secondary education all worked at schools connected with the teacher training institute (ICLON, Leiden University). The schools were mostly located in the western part of the country. Teachers in secondary education received the questionnaire through a contact person at school, mostly a mentor of pre-service teachers. All contacts received a letter containing an explanation of the project and brief instructions. The number of questionnaires sent to a contact person, was related to the size of the school.

In higher education, the questionnaire was sent to the work addresses of all teachers employed at Leiden University. The questionnaire was sent with the permission of the Executive Board. Leiden University consists of the following faculties: Archaeology, Medicine, Theology, Arts, Law, Social Sciences, Mathematics and Natural Sciences, and Philosophy.

Together with the questionnaire, each teacher received a letter with a short explanation of the importance of the research. After two weeks the teachers received a reminder with the request to respond to the questionnaire if they had not already had the opportunity to do so.

5.5.4 Analysis

A principal components analysis was performed on each part of the questionnaire (goals of education, learning process, students and regulation) in order to

construct scales in the questionnaire. The homogeneity of the scales was checked – specifically Cronbach's alpha and the effect of removing some items on the value of alpha. The relation between the different scales was explored using a second principal components analysis (PCA). Each respondent's average component score was used as a new variable and correlated with independent variables such as gender, age, and experience in education. In addition, an independent samples t-test and an analysis of variance (one-way ANOVA) were used to explore the relation between the discipline and the component scores of the respondents. An ANOVA tests the null hypothesis, which suggests that all means of the dependent variables, in this case the component scores, are equal. Significance of this F test indicates that there is a difference between at least two of the disciplines. We used a Tukey posthoc test (HSD) to compare means, where F indicated a significant difference between the disciplines.

5.6 Results

5.6.1 Scale construction

Principal Components Analyses (with varimax rotation) were used to construct the scales. A separate PCA was performed for each part of the questionnaire. The eigenvalues, elbow criterion, and interpretability were considered to come to a stable solution. This analysis and its results are reported elsewhere (see Chapter 4). The reliability of the scales found in each of the four parts of the questionnaire ranged from .65 to .82 (alpha). An overview of the number of items per scale, the average scale score, standard deviation, and reliability is given in Table 4.9 in Chapter 4.

5.6.2 Teachers' perspectives

A Principal Components Analysis was performed to investigate the overall structure underlying the different scales in the questionnaire. The eigen values (>1), the elbow criterion, and the interpretability were considered, leading to a three-component solution explaining 49.7% of the variance (De Heus, Van der Leeden, & Gazendam, 1995). In Table 5.5 we retained these scales so as to give an overview of the scales and their loadings on the three components.

Table 5.5

Three component solution of principal component analysis (varimax rotation with kaiser normalisation) on scale scores with percentage of explained variance

Scales		Component 1	Component 2	Component 3
Goal	Pedagogy	**.79**		
Student	Differences	**.70**		
Learning process	Change	**.68**		
Student	Capabilities	**.66**		
Goal	Development	**.63**	.26	
Regulation	Together	**.51**	.22	
Goal	Acquiring Knowledge		**.74**	
Regulation	Teacher		**.74**	
Learning process	Building Knowledge		**.67**	
Goal	Opinion			**.69**
Regulation	Learner			**.67**
Student	Expectations			**.57**
% of Expl.var.		22,9	14,5	12,3
Cumulative %		22,9	37,5	49,7

N.B. Loadings >=.50 are in bold
N.B. Loadings <.20 are suppressed

In every component, goals (goal scales), beliefs (learning process and student scales) and actions (regulation scales) are represented; the three components of a perspective defined by Pratt (1992, 1998). In the goal scales, like education, central is what the teacher aims for in his or her teaching. In the belief scales central is what the teacher finds important about the learning process, or what learning is and what they believe about, for instance, students' capacities. In the action scales, for instance teacher regulation, central is who is controlling certain learning activities. Since goals, beliefs and actions are found in every component, we refer to components as perspectives.

Perspective 1: Development oriented and shared regulation (development-shared)
Teachers with a high score on component 1, have as their main goal the education and development of students. They find the aspect of education important: teaching students respect and norms and values, and stimulating the development of individual students; encouraging them to develop their talents. For them, the learning process is characterized by change; learning is not straightforward or linear, but they believe that by learning a person changes his or her view on the world and changes personally. It is important to take into account differences between students in teaching; for instance, differences between students' learning styles and students' capabilities. Regulation of learning activities is done by teacher and students together.

Perspective 2: knowledge oriented and strong regulation (knowledge-strong)
Teachers with a high score on component 2 have as their main goal of teaching the acquisition of knowledge and skills. Students should acquire a certain amount of knowledge which is seen as essential for everyone. Learning is also seen as the building up of knowledge and skills, and structuring that knowledge, for example, by summarizing the content. Learning is cumulative and should be done in a certain order, and the learning process is oriented towards a clear goal. Regulation of learning activities is done mainly by the teacher and is focused at explaining difficult material, being clear about the content, and deciding what students have to learn.

Perspective 3: Opinion oriented and loose regulation (opinion-loose)
For teachers with a high score on component 3, the main educational goal is stimulating a critical attitude in students and having them form an opinion about the subject. In this perspective, there is no explicit view on learning. Important, however, are teachers' expectations of their students. They expect students to work hard, to do their work independently, and to come with their own material to the lessons / tutorials. Regulation in this view is mainly in the hands of the learners: they must regulate their own learning, motivate themselves, discover themselves what learning strategies to use, and decide what to study themselves.

5.6.3 Discipline and the relation with teachers' perspectives

5.6.3.1 Hard-soft disciplines and school subjects

To investigate the relation between discipline and teachers' perspective we performed an independent samples T-test with the hard and soft disciplines on the average component scores. In this comparison we involved teachers of different school subjects and different university disciplines, and we investigated whether these teachers scored differently on the perspectives we found in the previous analysis (see Table 5.6).

Table 5.6

Comparison of Hard and Soft school subjects and disciplines and three component scores (independent samples t-test)

	Hard (n=217)	Soft (n=386)	T(p)
Component 1	-.17	.09	-3.172 (.00*)
Component 2	-.04	.01	-.635 (.53)
Component 3	-.11	.07	-2.224 (.03*)

*p<.05

We found significant differences on the first and third components. On both these components the teachers from soft disciplines scored higher than teachers from hard disciplines, indicating that they have a different orientation towards goals, beliefs about learning and students, and regulation. Teachers from soft disciplines more often have a 'development-shared' perspective which focuses on the goal of personal development of students, the learning process as change, and regulation by both teacher and learner. These teachers are also more oriented towards the 'opinion-loose' regulation perspective, which consists of the goal of opinion, the expectations of students, and regulation by the learner. In another study, we made a comparison between secondary and university teachers' perspectives on self-regulated learning (see chapter 4).

5.6.3.2 Hard-soft and pure-applied disciplines

It is difficult to apply Biglan's division (as modified by Becher, 1989) to school subjects. Since it is based on academic disciplines, we decided to do another analysis using the two dimensions, hard-soft and pure-applied, for the disciplines in higher education only, and to explore if there are more differences between the disciplines. To investigate the relationship between the average component scores and the disciplines, we used a one-way ANOVA and a Tukey HSD posthoc test (De Heus, Van der Leeden, & Gazendam, 1995). In Table 5.7, the average component scores are arranged according to discipline, with the last column indicating the significance level of the F test. As shown in Table 5.7, disciplines were found to differ on the first component.

Table 5.7

Significance testing (one-way ANOVA) of component scores by discipline (higher education)

	Hard Pure mathematics) N=62 Mean	Hard Applied (e.g. computer n=31 Mean	Soft Pure history) N=150 Mean	Soft Applied (e.g. law) n=54 Mean	F (p)
Component 1	-.41	-.29	.26	-.15	8.729 (.000)*
Component 2	.03	-.23	.02	-.05	.612 (.608)
Component 3	.15	.33	-.05	-.16	2.297 (.078)

*Significant p<.05

Teachers from soft-pure disciplines scored significantly higher on the first perspective, the 'development-shared' perspective, than teachers from all other disciplines. This indicates that teachers from disciplines like languages and history value the goal of personal development and education, that they see learning as changing, learners as different, and regulation as being mainly in the hands of both teacher and learners. The other two perspectives were not scored significantly higher by any of these four groups of teachers in different disciplines.

5.6.4 Relation of teachers' perspectives with independent variables

Correlation analysis was performed to investigate the relation of the perspectives with the independent variables: gender, age, previous education, and teaching experience.

Table 5.8

Correlations (two-tailed) between component scores and gender, age, experience in education and previous education

	Gender	Age	Experience	Previous Education
Perspective 1 Development oriented and shared regulation	n.s.	.18**	.15**	n.s.
Perspective 2 Knowledge oriented and strong regulation	n.s.	n.s.	.14*	n.s.
Perspective 3 Opinion oriented and loose regulation	n.s.	n.s.	n.s.	n.s.

n.s.= not significant, *p<.05, **p<.01 see table 8

The correlations found were low, but in three cases they were significant. There were no significant relations between gender, previous education, and the components. There were, however, significant correlations between age, experience, and components 1, 2, and 3. There was a significant correlation between age and experience and the 'development-shared' perspective; the older the teachers, the higher they scored on this component meaning that they aimed at the personal development of students and they characterized their practice as mainly consisting of shared regulation. The same relation was found for experience indicating that more experienced teachers also valued personal development. Older and experienced teachers scored higher on component 2, or the 'knowledge-strong' perspective.

5.7. Conclusion and discussion

The results of this study indicate three possible teacher perspectives on self-regulated learning: development-shared, knowledge-strong, and opinion-loose. The first perspective is characterized by a focus on the goal development. Teachers with this perspective see learning as changing the students' view on the world and changing them personally. Regulation in this perspective is done by both teacher and students together. In the second perspective, the main goal is knowledge building, and learning is seen as acquiring knowledge and skills. Regulation is mainly in the hands of the teacher as the content expert who conveys his or her knowledge of the subject. The third perspective is characterized by the goal of opinion, which refers to the importance of students' developing a critical attitude. Regulation is mainly in the hands of the learners. In all three perspectives, goals (goal scales), beliefs (learning process and students scales), and actions (regulation) were found, which is in line with Pratt's definition of perspectives (Pratt, 1992). The perspectives we found are not directly related to a specific group of teachers. Teachers can hold more than one perspective; but often have one dominant perspective.

A comparison can be made between our results and a study by Pratt in adult and higher education (1998) in which five perspectives were found, namely transmission perspective, apprenticeship perspective, developmental perspective, nurturing perspective, and social reform perspective. Two of these perspectives resemble the perspectives we found, namely, the transmission perspective and the developmental perspective, which are similar to our 'knowledge-strong' and 'development-shared' perspective, respectively. Central to the transmission perspective is the belief in a relatively stable body of knowledge which has to be reproduced by the learners. Instruction is mainly guided by the teacher as the content expert. In Pratt's development perspective the learners are central in that the teacher aims to adapt as much as possible to the needs of the different learners and aims to challenge them. The main role of the teacher is as a guide.

The third perspective we found, 'opinion-loose', is different from the other two perspectives: there is no specific view on learning. The main goal in this perspective is to stimulate a critical attitude in students and have them

forming an opinion about the subject they are studying. The expectations teachers have from their students are important; they expect students to work hard. Regulation is mainly in the hands of the learners: They have to regulate their own learning, motivate themselves, discover themselves what learning strategies to use, and decide what to study themselves. To our knowledge no perspectives like this one were found in other studies.

We compared the perspectives found with the hard and soft disciplines and school subjects. We found significant differences regarding the first perspective ('development-shared') and the third perspective ('opinion-loose'). Teachers from soft disciplines and school subjects scored significantly higher on both perspectives than did teachers from hard disciplines. Differences between these groups are possibly related to the nature of knowledge in the subject which in hard disciplines can be characterized as cumulative and atomistic, and in soft subjects as reiterative and holistic (Becher & Trowler, 2001) and to the distinction made by Grossman and Stodolsky (1995): the degree to which a subject is defined, the sequentiality of a subject, or the scope. Teachers in soft disciplines have a less well defined subject, which includes mostly other disciplines (scope), knowledge is characterized as holistic and outcomes of study are understanding and interpretation. These characteristics seem to logically fit the 'development-shared' perspective in which the personal development of the student is important, learning is perceived as changing a person's view on the world and changing personally, and regulation is in hands of both teacher and learners.

For teachers in higher education, we compared their perspectives for four different groups: hard-pure, hard-applied, soft-pure, and soft-applied disciplines. The largest significant difference found in an ANOVA was between the hard-pure and the soft-pure disciplines on the first perspective *'development-shared'*, namely teachers from soft-pure disciplines scored higher on this perspective than teachers from the hard-pure disciplines. In other words, teachers from soft-pure disciplines found the personal development of students more important, they considered learning to be a process of changing, and regulation of learning activities done by both teacher and learners.

Significant differences between disciplines were also found by Lindblomm-Ylänne et al. (2006), whose Conceptual Change/Student Focus scale (CCSF) resembles our development oriented / shared regulation perspective. The scores on the CCSF scale in their studies differed significantly between the disciplines. More specifically, the hard-pure discipline teachers scored lower than the soft-pure and the soft-applied discipline teachers. The hard-applied teachers scored lower than the soft-pure teachers on this scale. In addition, they also found a difference in the scores on the Information Transmission/Teacher Focus (ITTF) scale, on which hard-applied discipline teachers scored significantly higher than soft-pure and soft-applied discipline teachers. These results show that the main differences occur between hard and soft disciplines rather than between pure and applied.

As for the results of the study, caution is required with any generalization, since the response to the questionnaire was rather low (24%). This low response can partly be explained by the time of year (end of the semester)the

questionnaire was sent, the length of the questionnaire (respondents needed approximately 15-20 minutes to fill it in), and by the absence of a reward, either psychologically or financially. Each of these factors probably influenced the teachers' motivation to complete the questionnaire (Dillman, 1978).

The questionnaire itself can be seen as an additional outcome of this study. Consisting of two versions; it can be used both in secondary education and at university level to investigate teachers' perspectives on self-regulated learning. In future research, it would be worthwhile to investigate not only differences between disciplines and school subjects, but also variation within disciplines and school subjects.

6

General Conclusions and Discussion

6.1 Short summary of the study

Since the late 1990s, innovations in secondary education in the Netherlands have changed both the content of the subjects and the didactic approach. One of the reasons for introducing self-regulated learning in secondary education was to improve the transition to higher education. The main goal of our study was to explore and compare perspectives of both secondary and university teachers on self-regulated learning. Furthermore, we wanted to relate the perspectives we found to the discipline or school subject these teachers taught. Based on previous studies, we had several indications of important similarities between the two groups of teachers, but also of major differences. The different characteristics of each group of teachers include differences in training, the different roles teachers play in their teaching practice, and the dominant role of research in higher education.

Our research consisted of two studies, the first of which can be characterized as a small-scale qualitative study in which the variety in teachers' perspectives on self-regulated learning was explored. In this study, we interviewed 37 teachers from secondary schools and from university. In order to help teachers explicate their beliefs about teaching and learning, we provided the teachers with metaphors and asked them for their reaction. Based on the qualitative analysis of these reactions, we identified four different perspectives on self-regulated learning. Furthermore, we made a first comparison between the two groups.

In our second study, which can be characterized as a large-scale, quantitative study, we investigated perspectives on self-regulated learning in a large group of teachers, as we wanted to make a large-scale comparison between secondary and university teachers. Furthermore, we wanted to explore possible connections between teachers' perspectives and the discipline in which they teach. We developed a questionnaire based on the interview data, which was subsequently filled out by 675 teachers in secondary and higher education. Different statistical analyses were used to identify teachers' perspectives on self-regulated learning and to investigate the differences between the two groups of teachers.

In the following sections, we will describe and discuss the main results of the two studies for each of the three research question (see chapter 1, section 1.3). In addition, the main strengths and limitations of this study will be discussed, and suggestions for future study and practical implications will be given.

6.2 Main conclusions

6.2.1 Research Question 1: What perspectives do secondary and university teachers have on self-regulated learning?

Main conclusions from the interview study (chapter 2)

We investigated the variation in teachers' perspectives in a small-scale interview study (n=37), and identified the following four perspectives: 'meaning-loose', 'meaning-strong', 'knowledge-loose', and 'knowledge strong'. Here, 'meaning' and 'knowledge' pertain to teachers' views on learning, which can be interpreted as either learning as acquiring meaning or learning as knowledge building. The terms 'strong' and 'loose' pertain to the regulation of the learning process from the perspective of the teacher, and refer to either regulation by the teacher (strong) or regulation by both teachers and learners (loose). In each perspective, we found that teachers have specific goals and views concerning the learning process of their students, as well as the regulation in their teaching practice. The main distinguishing characteristics seemed to be teachers' views on learning and on regulation. Teachers were either meaning- or knowledge-oriented, and they reported either a more 'loose' or 'strong' regulation of their teaching practice (for other characteristics, see Table 34). To illustrate the perspectives we found, we will give a short description of a typical teacher with perspective 1 and a teacher with perspective 4. A 'meaning-loose' teacher (perspective 1) believes that learning revolves around developing meaning and understanding. Regulation in this perspective is mainly loose, which means that students are, gradually, given more responsibility for their own learning process. A typical teacher with this perspective expects students to take the initiative themselves, for instance, by discovering what their best method of learning is. In this perspective, a teachers' typical main goal is the development of students both in respect to their knowledge of the subject matter, as well as their personal development. Another important goal is independence, which stresses the responsibility students have to take for their own learning process. On the other hand, a 'knowledge-strong' teacher (perspective 4) believes that learning is all about acquiring knowledge and putting this knowledge to use. Regulation of the learning process in this perspective is mainly in the hands of the teacher. A typical teacher with this perspective expects students to actively study the subject matter. Such a teacher also believes that students do not work hard (enough) and do not have the right priorities. A typical teacher with this perspective sets the increase of students' knowledge as a main goal of his or her teaching practice. The four perspectives we found, were evenly spread out over secondary and higher education teachers and over teachers in different subjects.

Table 6.1

Four perspectives on self-regulated learning as found in interview study (n=37)

Perspectives	Goals	Learning process	Students	Regulation
Perspective 1 Meaning-loose	Goal is development of students and independence of students.	Learning is understanding a subject and seeing connections with other subjects, your own life, or daily practice.	Students are expected to take initiative.	Student and teacher are mainly in control.
Perspective 2 Meaning-strong	Goal of teaching is independence of students	Learning is understanding a subject and seeing/making connections with other subjects, your own life, or daily practice.	Students are expected to work hard.	The teacher is mainly in control.
Perspective 3 Knowledge-loose	Goal is teaching students' norms and values (pedagogy) and independence.	Learning is increasing subject-matter knowledge.	Students are expected to take initiative.	Student and teacher are mainly in control.
Perspective 4 Knowledge-strong	Goal of teaching is increasing students' knowledge.	Learning is increasing subject-matter knowledge.	Students are expected to study subject matter actively but often they do not.	The teacher is mainly in control.

Main conclusions from the survey study (Chapter 5)

We investigated teachers' perspectives also in a large-scale survey study, and identified the following three perspectives: 'development-shared', 'knowledge-strong', and 'opinion-loose'. Here, 'development', 'knowledge', and 'opinion' pertain to the goals teachers have set in their teaching, which could either be the personal development of students, acquiring knowledge and skills, or forming an opinion on the subject matter. 'Strong', 'shared', and 'loose' pertain to the regulation of the learning process which is either controlled mainly by the teacher (strong), by both teacher and learner (shared), or mainly by the learner (loose). In each perspective, we found specific goals, views on both the learning process, the students, and on regulation. We will briefly describe the 'opinion-loose' perspective, since this is somewhat different from the perspectives we found in the interview study. The main goal for 'opinion-loose' teachers is to foster a critical attitude in students, and to have them form an opinion of the subject they

are studying. Important are the expectations teachers have of their students. They expect students to work hard, to do their work independently and to bring their own material to the classes or tutorials. Regulation in this perspective is mainly in the hands of the learners: They have to regulate their own learning, for example, discovering which learning strategies to use.

Table 6.2

Three perspectives on self-regulated learning based on survey study (n=675)

	Goals	**Learning process**	**Students**	**Regulation**
Perspective 1 Development-shared	Goal is development of students and pedagogy.	Learning is changing your view on the world and on yourself as a person.	Students are different and have more capabilities than they often think themselves.	The students and the teacher together are in control.
Perspective 2 Knowledge-strong	Goal is increase Of subject-matter knowledge.	Learning is increasing subject-matter knowledge.	-	The teacher is mainly in control.
Perspective 3 Opinion-loose	Goal is forming an opinion.	-	Students are expected to work hard and take initiative.	The student is mainly in control.

Discussion

The two perspectives showing the strongest resemblance are the 'knowledge-strong' perspective in the first study (see Table 6.1), and again the 'knowledge-strong' perspective in the second study (see Table 6.2). Both of these perspectives, with identical names, have knowledge building as their main goal, while learning is perceived as acquiring knowledge and skills, and regulation is mainly in the hands of the teacher. Also, the 'meaning-loose' (see Table 6.1) and 'development-shared' (see Table 6.2) perspectives show a strong resemblance. In both of these perspectives, the goals of personal development of students and education of students (pedagogy) are important, and regulation is considered to be mainly in the hands of both teacher and learners. A difference is that while in the interview study the learning process was perceived as acquiring 'meaning', in the survey study it was perceived as 'changing'. An explanation could be that these two categories are closely related; in the interviews they were often found together, and in the questionnaire study both items about learning as it pertains to changing as a person, and as it pertains to acquiring meaning were combined in the same scale of 'learning as change'.

An important difference between the interview and the survey study was the position of regulation; in the interview study it was not possible to make a clear distinction between 'loose' and 'shared' regulation. In other words, regulation done by the student and by both teacher and students. 'Loose' and 'shared' regulation were often found together. Teachers talking about sharing

responsibility for the learning process with students often also talked about students' responsibility, for instance, to motivate themselves to learn. It was possible to make a distinction between 'loose' and 'shared' regulation in the survey study, in which factor analyses were used to create scales in the questionnaire. 'Loose' and 'shared' regulation were identified as separate scales.

Differences between the two studies can partly be explained by the method that was used by each. In the interview study, teachers could freely express their intentions and beliefs, while in the survey study they were asked to respond to a predetermined set of items which reduces the variation. The perspectives 'meaning-strong' (perspective 2) and 'knowledge-loose' (perspective 3) which we found in the interview study, were not found in the survey study, probably because of this loss in variation. In other research in which a questionnaire was based on a variety of beliefs found in interviews, a similar loss in variation was reported (for instance, Trigwell and Prosser, 2004). Furthermore, in the interview study we investigated the perspectives and defined groups of teachers with a similar perspective, resulting in four groups (meaning-strong, meaning-loose, knowledge-strong, and knowledge-loose). This is similar to Larsson's approach (1983). In our survey study we identified perspectives not specifically related to groups, but based on the variation in responses (similar to the approach of Pratt, 1998). We also had a different and larger sample to work with in the survey study.

The perspectives of secondary and university teachers we found are, to some extent, in line with the innovation in secondary education. The two perspectives 'opinion loose' and 'development shared' are more or less in line with the innovation, in that the teacher shares the regulation of the learning process with the students, and values students' personal development, individual differences, and sees the learning process as acquiring meaning and changing students' perspective. On the other hand, the 'knowledge-strong' perspective which has a strong focus on the transmission of knowledge and regulation by the teacher, does not adhere to self-regulated learning as encouraged in secondary education.

Furthermore, we consider the perspectives we found to be qualitatively different, and of equal importance, meaning that no one perspective is better than the others. This is contrary to research in which perspectives are often represented as one-dimensional with on the one hand 'content', 'transmission' or 'teacher' and on the other hand the 'learning process', 'conceptual change' or the 'learner'. These sides are also characterized as being either traditional or progressive (e.g., Kember, 1997; Bolhuis & Voeten, 2004). This one-dimensional interpretation of perspectives also carries a normative aspect, since progressive and learner-oriented conceptions are considered to be more desirable. Our study does not confirm this one-dimensional interpretation. We found perspectives to be more complex, that is consisting of more than two opposing conceptions, and more diverse, that is, consisting of several different categories of beliefs. In each perspective, different categories were found which consisted of, goals, beliefs and actions, as hypothesized by the model we used.

6.2.2 <u>Research question 2:</u> What are the similarities and differences between secondary and university teachers' perspectives on self-regulated learning?

Main conclusions from the interview study (Chapter 3)

In Chapters 3 and 4, we compared secondary and university teachers' perspectives to see if they are in line with each other. The main similarities found between secondary and university teachers in the interview study are the following: Both groups of teachers find the goal acquiring knowledge equally important, both groups perceive the learning process as knowledge building, applying knowledge and skills, and changing learners' view on the world, and both groups characterize the learning process as a process of discovery, a process with a clearly identified goal, and specific order. Teacher's views of students are also similar in both groups. The control of the learning process is of equal importance to both groups, as are instructional activities conveying subject matter, explaining subject matter, and structuring subject matter, as well as the motivation of learners, and learning to learn.

We found the main differences between secondary and university teachers to be in the following categories: teachers in secondary education find the goals of pedagogy and development important, while university teachers find the goals of developing opinion and fostering independence more important. Concerning the learning process, teachers at the university level consider the learning process to be mainly about structuring and acquiring meaning. University teachers, furthermore, emphasize the process-oriented character, which means that it is not the outcome of learning which is important, but rather the process of learning itself, and also that learning is never finished. Finally, the instructional activities related to creating a 'good' learning environment and to social contacts between students and teachers are more important to teachers in secondary education.

Main conclusions from the survey study (Chapter 4)

According to the results of the survey study, teachers in both secondary and university education refer to the learning process as the building of knowledge. Both groups of teachers have similar expectations of students; namely that they are not very much involved. Secondary and university teachers find both strong, and loose regulation of equal importance.

We found the most obvious differences between the two groups of teachers in the different goals that they have for their teaching practice, namely educating students (pedagogy), and forming an opinion, and the way they think about the capacities of students. Teachers in secondary education find teaching students norms and values important. Teachers in higher education, on the other hand, value helping students to form an opinion of the subjects they study. We found other differences between these two groups as well. Secondary teachers find acquiring a basic package of knowledge and skills important, and they value the personal development of their students. The learning process is more often seen as signifying 'change' by these teachers; meaning that they believe that by learning you change your view of the world, and you change as a learner. These

teachers also find it important to take the differences between students into account and they find that students often have more capacities than they might think themselves. A final remarkable difference is that teachers in secondary education report more shared regulation in their teaching practice, control over the learning process by both teacher and learners, than teachers at university. Our analyses showed that the scores on the scales 'pedagogy', 'opinion', and 'capacities' of students could 'predict', in 85,3% of the cases, whether a teacher belonged to secondary or to higher education (chapter 4, section 4.3).

Discussion

The similarities between secondary and university teachers are the same in both the interview and survey studies, namely that teachers see the learning process as increasing the knowledge of their students. Both groups of teachers have similar expectations of students and indicate both strong and loose regulation in their teaching practice. We found more similarities than differences between the two groups in the interview study than in the survey study. The question is what these similarities between the two groups of teachers tell us. Both groups of teachers agree on the fact that acquiring knowledge and skills is important, they have similar expectations of student, and they indicate similar (strong and loose) regulation in their teaching practice.

In both interview and survey studies, differences were found between the two groups concerning the goals of pedagogy, development, and opinion. The goals of pedagogy and development are more important to teachers from secondary education, and the goal of opinion is more important to teachers in higher education. This is in line with suggestions made in the literature about the differences between secondary and university teachers, and concerns the different goals both types of education have (Menges & Austin, 2001). These findings are also in line with suggestions that the more advanced the level of education is, the more likely that the focus of the teacher is on the content, and the less likely that it is on the learner (Marton & Booth, 1997). This is apparently reflected in our findings.

The findings from our study reveal that secondary teachers are more directed to the learners, considering the importance they attach to the personal development of students, by teaching them norms and values, and the capacities of individual students, whereas university teachers focus more on content, considering the importance they attach to their students forming an opinion of the subject being studied. Marton and Booth (1997) similarly suggest, after reflection on different studies, that secondary and university teachers differ with regard to the focus they have which in secondary education is more on the learners, who are seen as potentially variable, which means that teachers tend to distinguish between students and, for example, the way they learn. These differences are taken into account in teaching. The content is more or less taken for granted. On the other hand, in university education the content is considered variable and the learners are taken for granted. University teachers tend to focus more on the variation in content, considering phenomena from different (theoretical) perspectives, and considering the diverse ways the content is

experienced by the students (Marton & Booth, 1997, p.173). Although we found the same tendency in our data, we also found that there is no a 'black-and-white' distinction between secondary and university teachers. Especially older university teachers are more inclined to focus on the students, while younger secondary teachers are more inclined to focus on the content of the school subject.

Important for a teacher is to bring learners' knowledge of the world one step further, and to communicate about the content of the subject and the way it is understood, according to Marton and Booth (1997). They write that: "a demand for such thought contact is that the teacher is aware of the dimensions of variation that refer to content as experienced (how it is understood by the learners) and to the learners as experiencers of the content (how they approach the tasks of learning, how they experience learning itself, how they experience the learning context" (Marton & Booth, 1997, p. 175). This would imply that to have such thought contact, secondary teachers would need to focus more on content, and university teachers more on the learners.

Boulton-Lewis et al. (2001), in their interview study in secondary education, found no indication that secondary teachers are more student- focused than teachers at university. Note that in this study only secondary education teachers were investigated and that the results of this study were compared to existing studies on university teachers' conceptions. In our study, we did find a marked difference between secondary and university teachers. Differences are probably more apparent because we investigated both groups of teachers empirically in the same study.

6.2.3 Research question 3: What is the relation between secondary and university teachers' perspectives on self-regulated learning and the discipline they teach?

Main conclusions from the survey study (Chapter 5)

In Chapter 5 we investigated the relation between teachers' perspectives and their disciplines. The disciplines were categorized as being either hard (e.g., mathematics, physics) or soft (e.g., languages, history). We found the following differences between hard and soft disciplines. Teachers from soft disciplines scored higher on the 'development-shared', and the 'opinion-loose' perspective. Thus, teachers from 'soft' disciplines more often have a 'development-shared' perspective which focuses on the goal of personal development of students, the learning process as signifying change, and regulation by both teacher and learner. Also, these teachers are more oriented towards the 'opinion-loose' regulation perspective which consists of the goal of developing a personal opinion, expectations of students, and regulation by the learner.

Furthermore, we investigated the differences between teachers from different university disciplines, using Becher's dimensions (2001), which identifies, 'hard'-'soft' and 'pure'-'applied' disciplines. Soft-pure discipline teachers scored significantly higher only on the 'development-shared' perspective, compared to teachers from the other groups of soft-applied, hard-pure, and hard-applied disciplines. This was the only significant difference.

Discussion

Differences between hard and soft disciplines, and the perspectives teachers have might be related to the character of the subject. 'Hard' disciplines are, in general, characterized by one paradigm and an established knowledge base, whereas in the 'soft' disciplines there is no one clear paradigm. It is likely that the importance of the goals of 'opinion' and 'development', identifying learning as signifying 'change', and regulation as 'loose' or 'shared', suits teachers from soft disciplines more. In their disciplines' interpretations, of for instance texts, are important and are considered to be a result of research, while the nature of knowledge growth is considered to be holistic and reiterative (see Chapter 5). It is likely that these teachers want to foster a critical attitude in their students, meaning for instance that they learn to judge texts and form their own personal opinion of them. Learning is perceived by these teachers as signifying a change of view, which can also be connected to the knowledge growth category in this discipline, which requires students to compare views.

In the hard disciplines, in general, the nature of knowledge growth is considered cumulative, and results are explained as being a discovery or an explanation (Becher & Trowler, 2001). Teachers from these disciplines have a different view on goals, learning, students, and regulation compared to teachers from soft disciplines.

Although there is some research available on the differences between disciplines, explanations about the causes of these differences still need to be studied (Neumann, 2001). According to Becher and Trowler (2001), both epistemological factors and social factors are of influence, but how they relate is not clear. In two studies in secondary education, researchers also explored the subject, and took its relation to teachers' conceptions into account as well. Both studies obtained different results. Waeytens et al. (2002), in their study of secondary education, interviewed Dutch language and mathematics teachers, and found no relation between teachers' conceptions and the subject they were teaching. Boulton-Lewis et al. (2001) did find a difference between second language, science and mathematics teachers, and literature and arts teachers. For instance, teachers who thought of teaching as transmission of contents / skills were all second language teachers, whereas teachers who saw teaching as transformation taught subjects like English literature and Art.

The fact that no significant differences were found in Waeytens' study may be related to the sample or the limited amount of school subjects taken into account. Like in the study by Boulton-Lewis et al. (2001) in secondary education, and the study by Lindblomm-Ylänne et al. (2006) in higher education, we found significant differences between teachers from different subjects which makes discipline an important factor to take into account in the investigation of teachers' perspectives.

6.3 Strengths and limitations of this study

6.3.1 Strengths of this study

This study contributes to our knowledge and understanding of the perspectives secondary and university teachers have on self-regulated learning. The strengths of our study will be outlined here.

Up until now teachers' perspectives in secondary and university education were studied separately. Many studies suggested that there are major differences between the two groups of teachers, and that they are even 'a breed apart' (Kember, 1997). However, others suggested many similarities, for instance Boulton-Lewis et al. (2001) in her study on secondary teachers' beliefs about teaching and learning. Although comparisons were made between the results of different studies in secondary and university education, it remains difficult to compare studies because they have been carried out in separate contexts. In our study, we took both groups of teachers into account and used the same procedure to investigate both similarities and differences between the two groups.

Furthermore, we used an open approach to the study of teachers' perspectives on self-regulated learning, meaning that we explored the variation in teachers' perspectives empirically. We identified perspectives in a qualitative study and used the results from this study to design a questionnaire, using the teachers' own language, which contributes to the quality of the questionnaire. This approach differs from previous studies on self-regulated learning, in which conceptions were derived from the literature and researchers then investigated which of these pre-defined conceptions fitted teachers best (Bolhuis & Voeten, 2004; Waeytens, Lens, & Vandenberghe, 2002).

Another strength of our study is the new way in which we used metaphors; in previous studies, for instance, teachers' metaphoric language was studied (Morine-Dershimer & Tarpley Reeve, 1994), teachers were asked to create a metaphor about their own teaching practice (Martinez, Sauleda & Huber, 2001), either in words or in a drawing, or teachers were encouraged to change their teaching practice, or their thinking about a metaphor (Tobin & Tippins, 1996). In our interview study we used metaphors on teaching and learning and asked teachers to respond to these. Teachers were given the opportunity to respond to any aspect of the metaphor in an open way, for instance, teachers reacted to the idea of the teacher as a gardener. The reactions on the metaphors were of interest, not merely to see whether or not teachers agreed on a metaphor, but, more specifically, why. So the metaphors were mainly meant as triggers for teachers to respond to and to help them explicate their beliefs about teaching and learning. This seems a promising method but further research on the validity of the data generated by this method as compared to other methods is necessary, in order to fully investigate teachers' beliefs.

6.3.2 Limitations of this study

There are some aspects that should be considered when reading the conclusion of our studies. Below we will indicate a few limitations of our study.

A major problem in the literature on teacher's beliefs is the use of self-reporting instruments. In this study we used two instruments which both rely on the self-reporting of teachers. In the semi-structured interview we used, teachers were asked both directly and indirectly, by means of metaphors, about their intentions, beliefs, and actions. Words do not always represent thoughts though, and therefore one should be careful in the analysis of these verbal reports (e.g., Calderhead, 1996). Another consideration is that for some people it is more difficult to express their beliefs than for others. A related problem may also be that teachers do not have direct access to their beliefs, because of their sometimes tacit nature (Carter, 1990; Munby, Russell, & Martin, 2001; Kagan, 1992). In our interview study, we tried to counter this last problem by having respondents react on a number of metaphors related to teaching and learning. Metaphors gave teachers the opportunity to react freely, and provided a trigger to report on what they find important in teaching and learning. In the second part of our study we used a questionnaire, which is vulnerable for social desirable responses. Furthermore, questionnaires may also contain items that teachers do not recognize as their own beliefs, for instance because of the language used (Kagan, 1990). We tried to compensate for this problem by using quotations from interviews, in other words, by using teachers' natural language, in order to formulate items. We assume that this approach may have helped teachers to recognize their beliefs in the questionnaire, and, in other words, may have triggered their tacit knowledge. Another problem indicated by Pajares is that the different contexts teachers work in cannot be taken into account in a questionnaire: "individual items fall prey to 'it depends' thinking" (Pajares, 1992, p. 327).

Another limitation in our study is the sample and response in both interview and questionnaire studies. In our interview sample, we wanted as much variation between teachers' beliefs as possible and for that reason we asked people familiar with the teacher population at a certain school, or in a certain department at university, to advise us on the teachers we could approach. It might very well be possible that the teachers in our sample were those (easily) willing to participate, and not necessarily those teachers who differ as much as possible from one another. As for the questionnaire study, a limitation in this study is the generalizability of the results of the questionnaire due to the limited response. We have to be cautious with any generalization, since the response to the questionnaire in this study was rather low (24%). The characteristics of the sample, like age and experience, did look a lot like the characteristics of the target population. From this point of view, there is no indication that our sample is not representative.

6.4 Suggestions for future research

In our study, we only investigated teachers' perspectives. We did not take teachers' behavior in their teaching practice into account, nor did we relate teachers' perspectives to their behavior in their teaching practice. Like in most

other studies, we assumed that teachers' perspectives influence the decisions they make in their classroom teaching practice, and vice versa (Pajares, 1992). Kane, Sandretto and Heath (2003), showed, in their review of studies on university teachers' beliefs and practices, that most studies investigate teachers' conceptions and assume a certain teaching practice while they have not actually studied it. This would be a suggestion for future study in which the questionnaire can be used to identify teachers with different perspectives, and its results, could subsequently, be related to observations in their teaching practices. This way it would be possible to determine the consistency or inconsistency between perspectives and behavior. More specifically, it would be interesting to do this in specific settings; with different levels, classes, and teaching methods (Trigwell & Prosser, 1994).

Another suggestion for future study would be to adapt the questionnaire we developed in several ways. Firstly, by decreasing the number of items, in order to make it easier for teachers to fill out the questionnaire, and to use it in a large-scale study provided, of course, that the reliability of the scales in the questionnaire would be the same. Secondly, teachers could be asked to fill out the questionnaire for a specific situation (either for a specific teaching method, or a specific class or group). It is likely that teachers will report different conceptions when thinking about a specific teaching method (e.g., large class or small group) or when thinking about a specific group (specific learners may require a specific approach). Context-specific conceptions can be investigated in this manner (see also Lindblomm-Ylänne et al., in press). Thirdly, the items on regulation can be adapted for the different disciplines. This way it could be possible to investigate the influence of the teaching context on the manner in which teachers fill out the questionnaire, and it would be possible to compare perspectives *within* a specific (disciplinary) context.

Changing one's perspectives is difficult according to different studies. However, it also has not been investigated much (Pajares, 1992). A suggestion for a follow-up study would be to ask teachers to fill out the questionnaire at different moments in time over a longer period of time, and to see if any changes take place and in what 'direction' these changes move. This would be especially interesting in an innovative context, to discover if the innovations influence teachers' perspectives.

6.5 Implications

In our study we used Pratt's model which assumes that intentions, beliefs, and (perceived) actions are three central aspects to investigate teachers' perspectives. In our survey study, we found that the perspectives we defined consisted of these same three elements, which can be seen as a confirmation of the model in another context, namely in secondary and university education, and related to another phenomenon, namely self-regulated learning instead of teaching.

Findings from this study suggest that the implementation of self-regulated learning is problematic for teachers with a 'knowledge-strong' perspective, i.e. with a focus on the increase of knowledge, a view of learning as an accumulation of facts, and the teachers as the one in control of learning activities. Although the literature indicates that a change of perspectives is difficult to achieve (Pajares, 1992), it may be useful to invest in additional training for teachers, which could focus on the intentions, beliefs and actions of teachers.

The problematic transition from secondary to higher education was one of the reasons for innovations in secondary education in the Netherlands. In this study, we investigated the teachers' view on self-regulated learning. The question is what can be done to improve the transition. In general, it seems that measures in both secondary education and at university are needed; in secondary education, a stronger focus on content is required, while in higher education, a stronger focus on the individual learner is required. Secondary education teachers may need to focus more on the variation in their subject content, as they teach to prepare their students for university. In other words, teachers should focus more on the different views and opinions of knowledge, and the necessity of forming a personal opinion of the subject matter being studied. Attention should be paid to this aspect in teacher training situations as well. Furthermore it is important that (pre-service) teachers know what they are preparing their students for; in other words that they are familiar with research and teaching (methods) in a certain discipline at university. Universities, on the other hand, could invest more in the initial support of students. Some universities already use mentoring groups in which not only content matter is discussed but personal matters as well. In a recent discussion, Van Wieringen refers to the 'educative' function of the university, by stressing that small-scale academic institutes, where the building of a social network is possible, may contribute more to the education of students and prevent attrition (Van Wieringen, 2005).

The questionnaire that we developed can be seen as an important additional result of this study. The questionnaire could possibly be used in other contexts, for instance in pre-service teacher education or in additional training for experienced teachers, to find out what perspectives teachers have on self-regulated learning. For instance, if teachers want to change some aspects of their practice, it is important that they are able to explicate what they find important. This could be a vantage point for thinking about a direction for change, and for reflection on teachers' own perspective.

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Nederlandse Samenvatting

Centraal in dit proefschrift staan de perspectieven van docenten met betrekking tot zelfstandig leren. In dit proefschrift wordt onder perspectief het volgende verstaan 'een samenhangend geheel van opvattingen over onderwijs, onderwijsdoelen en onderwijsstrategieën, waarmee de verschillen tussen individuele docenten gekarakteriseerd kunnen worden' (Pratt, 1992; 1998). In **hoofdstuk 1** wordt nader ingegaan op de aanleiding, de achtergronden, de onderzoeksvragen en de relevantie van het onderzoek.

Grootschalige onderwijsvernieuwingen, met name de invoering van de Tweede Fase en het bijbehorende studiehuis, hebben de afgelopen jaren veel veranderingen gebracht in het voortgezet onderwijs. Deze onderwijsvernieuwingen hadden onder andere gevolgen voor het aantal vakken en de inhoud daarvan. Er kwam een grote nadruk te liggen op vaardigheden die leerlingen moeten beheersen. Daarnaast werden profielen ingesteld, een vaste combinatie van vakken waaruit leerlingen kunnen kiezen, ter vervanging van het vrije vakkenpakket. Voor dit onderzoek is echter met name het gevolg van deze vernieuwing voor de inrichting van de leeromgeving voor de leerling van belang. Hierin is een grote nadruk komen te liggen op het (zelfstandig) leren van de leerling, dat wil zeggen dat de leerling gaandeweg meer zijn of haar eigen leren moet gaan sturen, zowel in het voorbereiden, het uitvoeren als het evalueren van dit leerproces (Zimmerman & Schunk, 2001). De veronderstelling was dat deze vernieuwingen, met name de nadruk op het zelfstandig leren van de leerling, de tot dan toe problematische overgang naar het hoger onderwijs voor leerlingen zou vergemakkelijken. Leerlingen zouden beter voorbereid zijn op de zelfstandigheid die in het wetenschappelijk onderwijs van hen gevraagd wordt.

In al deze ontwikkelingen binnen het voortgezet onderwijs speelt de docent een cruciale rol. Hij of zij is immers degene die de leerling begeleidt bij het leerproces, en dit vraagt van hem of haar een andere rol. Deze verschuift van het overdragen van vakkennis naar het begeleiden van het leerproces van de leerling (Vermunt & Verloop, 1999; Bolhuis, 2000). De prototypische studiehuisdocent heeft een grondige kennis van het vak, combineert die met een kijk op het feitelijke en mogelijke leerproces van de leerlingen, en is in staat om daar op een adequate manier op in te spelen. De vernieuwingen hebben dus direct gevolgen voor het gedrag dat van docenten verwacht wordt in het primaire proces van het 'lesgeven'.

Uit onderzoek blijkt dat het gedrag dat docenten vertonen in de klas, in belangrijke mate beïnvloed wordt door de perspectieven die zij hebben met betrekking tot onderwijs (Pajares, 1992; Mathijssen, 2006). In dit proefschrift staan daarom de perspectieven die docenten hebben met betrekking tot het fenomeen zelfstandig leren centraal. In het onderzoek wilden we daarbij docenten uit beide typen onderwijs, het voortgezet onderwijs (VO) en het wetenschappelijk onderwijs (WO) betrekken. Docenten in het VO, omdat zij in hun praktijk geacht worden het zelfstandig leren van leerlingen te bevorderen, en docenten uit het WO, omdat aangenomen wordt dat zij vragen om studenten die in staat zijn om zelfstandig te leren (Stuurgroep profiel tweede fase

voortgezet onderwijs, 1993). Het bestaan van grote verschillen, of overeenkomsten, tussen beide groepen docenten, in termen van hun perspectieven, zou uiteindelijk gevolgen kunnen hebben voor hun lespraktijk en daarmee op de aansluiting tussen VWO en WO. Naast de mogelijke verschillen tussen docenten uit het voortgezet en wetenschappelijk onderwijs, waren we geïnteresseerd in de mogelijke relatie tussen de schoolvakken (VO) en disciplines (WO) en de perspectieven die docenten rapporteren.

Dit proefschrift probeert daarom het antwoord te vinden op de volgende vragen:

- *Welke perspectieven hebben docenten met betrekking tot zelfstandig leren?*
- *Wat zijn de overeenkomsten en verschillen tussen de perspectieven van docenten in het VO en WO?*
- *Wat is de relatie tussen deze perspectieven en de discipline waarbinnen docenten werkzaam zijn?*

Er is tot nog toe geen empirisch onderzoek gedaan naar de perspectieven van zowel docenten in het voortgezet als in het wetenschappelijk onderwijs. Op grond van verschillende studies zijn er wel aanwijzingen dat er overeenkomsten zijn (Boulton-Lewis, 2004), maar ook dat er belangrijke verschillen zijn (Menges & Austin, 2001). Bovendien ontbreekt onderzoek naar perspectieven op zelfstandig leren in deze groepen. Daarnaast is er in het buitenland op beperkte schaal onderzoek gedaan naar de relatie tussen perspectieven en de discipline of het schoolvak waarbinnen docenten werkzaam zijn (Lindblomm-Ylänne et al., 2006). Aan genoemd onderzoek kan dit proefschrift een bijdrage leveren.

Het onderzoek werd uitgevoerd in twee deelonderzoeken: een exploratieve en kleinschalige interviewstudie en een grootschalig vragenlijstonderzoek. In het exploratieve deel lag de nadruk vooral op het ontdekken van de verschillende doelen, opvattingen en strategieën die onderdeel zouden kunnen uitmaken van perspectieven van docenten. Hier werd een eerste poging ondernomen om met behulp van deze verschillende elementen de verschillende perspectieven te beschrijven van docenten. Het exploratieve deel had tevens een voorbereidende functie voor het ontwerp van de vragenlijst voor het tweede deelonderzoek. In dit tweede deel, de grootschalige vragenlijststudie, lag de nadruk op het vaststellen van de verschillende perspectieven en de deelaspecten (de verschillende doelen, opvattingen en strategieën) hiervan. Tevens werd hiermee onderzocht of er een mogelijk verband bestaat tussen de perspectieven en de disciplinaire achtergrond van de docent.

In **hoofdstuk 2** en 3 gaan we vooral in op het ontwerp en de analyse van de interviewstudie. Zesenendertig docenten werd door middel van semi-gestructureerde interviews gevraagd naar hun ideale onderwijs en naar de rol van de student of leerling in hun onderwijs. Uit een pilot-onderzoek bleek dat het voor docenten lastig is om te reageren op directe vragen over zelfstandig leren. Daarom werd een alternatieve methode ontwikkeld om docenten te helpen expliciet te maken wat zij vonden van zelfstandig leren. Door middel van het voorleggen van een aantal metaforen over onderwijs, de rol van de docent en

het leren, ontleend aan de literatuur (Fox, 1983; Ebbens, 1994), werd docenten een aanknopingspunt geboden om te verwoorden wat zij belangrijk vinden. Een voorbeeld van een gebruikte metafoor: "Onderwijs is als een reis door het landschap van de vakinhoud met de docent als gids van een groep leerlingen". Op basis van onder andere de 'compactheidsthese' en de 'onuitspreekbaarheids these' van Ortony (1975) werd verondersteld dat met metaforen in een paar woorden een wereld van betekenis opgeroepen kon worden en dat datgene wat moeilijk uit te spreken is, duidelijk gemaakt kon worden. Het voorleggen van deze metaforen aan docenten bood hun een reeks aanknopingspunten om op te reageren en duidelijk te maken wat hun perspectief is.

De analyse van de interviewgegevens leverde zes thema's op, te weten doelen, visie op leren, visie op kenmerken van het leerproces, visie op lerenden, regulatie en instructie-activiteiten, welke verder onderverdeeld konden worden in vier tot zeven categorieën (zie hoofdstuk 2). Voor het duiden van de perspectieven, dat wil zeggen patronen in het voorkomen van de categorieën, bleken uiteindelijk twee thema's het belangrijkst, namelijk visie op leren en regulatie. Ten eerste de visie op leren, met als belangrijkste categorieën (a) leren als het opbouwen van kennis en vaardigheden (kennisgericht) of (b) leren als het construeren van betekenis en het in staat zijn kennis te koppelen aan andere vakken of contexten (betekenisgericht). Ten tweede de inschatting van de mate van regulatie, die ofwel (a) los is, dat wil zeggen dat de docent veel van de instructie activiteiten overlaat aan de leerlingen of beter gezegd leeractiviteiten bij de leerlingen laat, ofwel (b) sterk is, dat wil zeggen dat de docent de meeste instructie activiteiten in eigen hand heeft. Instructie activiteiten hebben hier bijvoorbeeld betrekking op motiveren, en leren leren binnen het schoolvak respectievelijk de discipline.

Met verschillende combinaties van deze categorieën bleken vier perspectieven op zelfstandig leren onderscheiden te kunnen worden, achtereenvolgens: 1) betekenisgericht en losse sturing, 2) betekenisgericht en sterke sturing, 3) kennisgericht en losse sturing en 4) kennisgericht en sterke sturing. Deze vier perspectieven bleken voor te komen bij zowel de docenten in het VO als in het WO.

Hoewel de perspectieven in beide groepen voorkwamen, vermoedden we dat er wel verschillen konden zijn op het niveau van de thema's en bijbehorende categorieën, bijvoorbeeld op het gebied van doelen. Daarom hebben we specifieker gekeken naar de verschillen tussen docenten uit VO en WO met betrekking tot de categorieën die we gevonden hadden en die beschreven zijn in hoofdstuk 2. Deze analyses worden beschreven in **hoofdstuk 3**. We hebben daarvoor onder andere gekeken naar de frequentie van de categorieën en naar de manier waarop deze voorkwamen bij de twee groepen docenten, dat wil zeggen dat we onderzocht hebben op welke inhouden de uitspraken, die onder een bepaalde categorie vielen, betrekking hadden. Hierbij bleek zowel een aantal overeenkomsten als een aantal verschillen te bestaan tussen beide groepen docenten. Zo bleken beide groepen *initiatief* en *actieve betrokkenheid* van studenten even belangrijk te vinden, en hadden beide groepen eenzelfde inschatting van de regulatie van de instructieactiviteiten in de eigen praktijk. Docenten uit het VO bleken echter meer gericht op de persoon van de leerling, dat wil zeggen dat zij belang hechtten aan de *persoonlijke*

ontwikkeling van leerlingen en de *opvoeding* van leerlingen. Verder hechtten zij belang aan *sociale activiteiten* en de *leeromgeving* van leerlingen. Docenten in het WO bleken daarentegen meer gericht op de inhoud, dat wil zeggen dat zij belang hechtten aan het innemen van een standpunt met betrekking tot de vakinhoud (*academische vorming*) en *zelfstandigheid* bij het verwerven van kennis van de student. Verder zien zij –meer dan hun collega's in het VO- leren overwegend als een *proces* dat nooit af is en hechtten zij groot belang aan het *structureren* van de stof, bijvoorbeeld door het maken van samenvattingen. Verder vinden zij het belangrijk dat studenten *betekenis* geven aan hun eigen leerproces, bijvoorbeeld doordat zij verworven kennis kunnen toepassen in een andere context.

In **hoofdstuk 4** beschrijven we de resultaten van een grootschalig vragenlijstonderzoek. Met behulp van de deelaspecten van de perspectieven (doelen, opvattingen en strategieën) die in de interviewstudie onderscheiden werden, werd een vragenlijst ontwikkeld en uitgezet onder ongeveer 3000 docenten. Uiteindelijk vulden 675 docenten de vragenlijst in, een respons van 24% die ongeveer gelijk was in VO en WO. Door middel van een exploratieve principale componentanalyse werd opnieuw onderzocht welke deelaspecten van perspectieven onderscheiden kunnen worden. Om te onderzoeken of er verschillen waren tussen de docenten uit het VO en WO hebben we gebruik gemaakt van een t-toets en een discriminant-analyse. Deze laatste analyse, die uitgaat van natuurlijk voorkomende groepen, geeft aan welke variabelen het beste het lidmaatschap van één van beide groepen kunnen voorspellen. Hierbij bleken de beste voorspellers om te bepalen tot welke groep (VO of WO) een docent behoort de scores op de schalen over *meningsvorming, opvoeding en capaciteiten van studenten* te zijn. Een hoge score op de schaal *meningsvorming*, dat wil zeggen dat docenten als doel hebben dat studenten zelf een mening vormen over de stof, was een voorspeller voor het werkzaam zijn in het wetenschappelijk onderwijs, terwijl een hoge score op de schaal *opvoeding*, dat wil zeggen dat docenten belang hechten aan de overdracht van normen en waarden, en *capaciteiten van studenten*, waarschijnlijk is voor een docent in het voortgezet onderwijs. Met de combinatie van de scores op deze drie schalen bleek het mogelijk om in 85,3% van de gevallen goed te voorspellen of een docent in het VO ofwel het WO werkzaam is.

Met de gegevens van het vragenlijstonderzoek hebben we onderzocht of er samenhangende patronen tussen doelen, opvattingen en strategieën te vinden waren, om tot mogelijke perspectieven te komen. Verder hebben we onderzocht of er een samenhang met disciplinaire achtergrond bestaat. Dit wordt beschreven in **hoofdstuk 5**.

Drie perspectieven op zelfstandig leren bleken onderscheiden te kunnen worden, namelijk: 1) ontwikkelingsgericht en gedeelde sturing, 2) kennisgericht en sterke sturing en 3) (menings)vorminggericht en losse sturing. Deze perspectieven vertonen deels een overlap met de perspectieven die we beschreven in hoofdstuk 2. Deels verschillen ze ook van de perspectieven die we in hoofdstuk 2 beschreven. Gemeenschappelijk is dat in al deze perspectieven een bepaald doel van belang is, namelijk meningsvorming door studenten, persoonlijke ontwikkeling van studenten of het opbouwen van kennis door

studenten. Daarnaast speelt ook sturing door de docent een belangrijke rol; deze is sterk, gedeeld of los. In twee van deze perspectieven, namelijk ontwikkelingsgericht en gedeelde sturing en kennisgericht en sterke sturing, is ook een duidelijke visie op leren te vinden. Docenten met een ontwikkelingsgericht perspectief zien leren als het construeren van betekenis en het veranderen van je visie op de werkelijkheid en jezelf als persoon. Docenten met een kennisgericht perspectief zien leren als het opbouwen van kennis en vaardigheden. In het eerste perspectief ontwikkelingsgericht en gedeelde sturing en in het derde perspectief (menings)vormingsgericht en losse sturing is ook een opvatting over studenten te vinden: in het eerste perspectief het belang van verschillen tussen studenten en het waarde hechten aan de capaciteiten van studenten, in het derde perspectief het hoge verwachtingen hebben van studenten bijvoorbeeld als het erom gaat dat studenten zelf moeten weten wat zij willen leren.

Vervolgens hebben we gekeken in hoeverre er verschillen zijn tussen docenten van verschillende disciplines als het gaat om deze perspectieven. We hebben daartoe de disciplines en schoolvakken eerst ingedeeld in 'hard' (bijvoorbeeld wiskunde) en 'zacht' (bijvoorbeeld geschiedenis), al naar gelang hierin gewerkt wordt vanuit een dominant paradigma , respectievelijk niet specifiek vanuit één bepaald paradigma (Becher & Trowler, 2001). In het wetenschappelijk onderwijs hebben we daarnaast ook nog een onderscheid gemaakt tussen 'pure' (bijvoorbeeld natuurkunde) en meer 'toegepaste' (bijvoorbeeld informatica) disciplines, waarmee bedoeld wordt dat in sommige disciplines het toepassen van kennis meer centraal staat.

Door middel van een t-toets hebben we gezocht naar verschillen tussen de docenten uit 'harde' en 'zachte' disciplines. Hieruit bleek dat docenten uit de 'zachte' disciplines het ontwikkelingsgericht en gedeelde sturing perspectief belangrijker vinden dan docenten in de 'harde' disciplines. Op de andere perspectieven vonden we geen belangrijke verschillen tussen docenten uit 'harde' en 'zachte' disciplines.

Alleen voor docenten uit het wetenschappelijk onderwijs hebben we via een variantie-analyse onderzocht of er verschillen waren tussen docenten van een 'hard-pure', 'hard-toegepaste', 'zacht-pure' en 'zacht-toegepaste' discipline. Uit deze analyses blijkt dat docenten uit de 'zacht-pure' disciplines hoger scoren op zowel het ontwikkelingsgericht en gedeelde sturing perspectief, als op het meningsvorminggerichte en losse sturing perspectief. De docenten uit de 'hard-pure', 'hard-toegepaste' en 'zacht-toegepaste' disciplines vinden deze perspectieven van minder belang dan docenten uit de 'zacht-pure' disciplines.

In het laatste **hoofdstuk (6)** komen de belangrijkste conclusies uit het onderzoek terug en worden ook de twee deelonderzoeken met elkaar vergeleken. Als het gaat om de perspectieven die docenten hebben, bleek dat de vragenlijststudie een perspectief liet zien, dat niet naar voren kwam bij de analyses van de interviews, namelijk (menings)vormingsgericht en losse sturing. Verder bleken twee perspectieven die wel naar voren kwamen uit de analyses van de interviews, niet gevonden te worden bij de analyse van de vragenlijst, te weten het betekenisgericht en sterke sturing perspectief en het kennisgericht en losse sturing perspectief. Dit kan gerelateerd zijn aan de gekozen analysemethode. In de interviewstudie is gekeken naar de combinatie van categorieën (patronen),

maar ook naar de manier waarop ze voorkomen 'binnen' docenten. De analyse van de vragenlijstgegevens is alleen op perspectiefniveau gedaan. Hoe de combinatie van perspectieven er per docent precies uitziet, is niet nader onderzocht.

Verder bleek dat in beide deelonderzoeken dezelfde verschillen tussen groepen docenten gevonden werden. Zo bleek in beide onderzoeken dat docenten uit het voortgezet onderwijs *persoonlijke ontwikkeling* van leerlingen belangrijk vinden en docenten uit het wetenschappelijk onderwijs *(menings)vorming*. In het licht van het recent verschenen rapport van het Tweede Fase Adviespunt (2005) zijn deze resultaten goed te plaatsen. Uit dit rapport blijkt namelijk dat de aansluiting tussen VO en WO niet duidelijk verbeterd is en dat docenten uit het Wetenschappelijk Onderwijs klagen over een gebrek aan vakinhoudelijke kennis en vaardigheden (zoals analytische vermogens) bij studenten. Het accent in het voortgezet onderwijs is onder invloed van het studiehuis verschoven naar het leerproces en vaardigheden, terwijl men in het wetenschappelijk onderwijs vooral de nadruk legt op kennis en academische vaardigheden.

In het slothoofdstuk worden sterke en zwakke punten van het onderzoek beschreven en worden suggesties gedaan voor vervolgonderzoek. Daarnaast worden mogelijke implicaties van het onderzoek beschreven. Een sterk punt van het onderzoek betreft de exploratieve aanpak. Met deze aanpak wilden we vooral rechtdoen aan docenten en hun manier van denken en praten meenemen in de ontwikkeling van de vragenlijst. Een ander sterk punt is dat in één onderzoek zowel docenten uit het voortgezet als uit het wetenschappelijk onderwijs zijn onderzocht. Vergelijkingen tussen beide groepen zijn tot nu toe alleen maar gemaakt op basis van losse onderzoeken in beide groepen apart. Als laatste is het gebruik van metaforen in de interviewstudie een sterke kant. Deze werkwijze bleek docenten te helpen bij het expliciteren van hun opvattingen. Een beperking van het onderzoek betreft de keuze voor zelfrapportage door docenten van zowel opvattingen als gedrag. Dit houdt in dat we voor onze conclusies volledig moesten vertrouwen op de zelfrapportage van docenten, terwijl het moeilijk kan zijn voor docenten om hun opvattingen en intenties te verwoorden.

Om uitspraken te kunnen doen over de consistentie of inconsistentie van opvattingen en gedrag, zou in vervolgonderzoek gekeken kunnen worden naar het (concrete) gedrag van docenten in de klas, gerelateerd aan hun opvattingen, specifiek over zelfstandig leren. Verder zou het de moeite waard zijn om docenten te vragen de vragenlijst in te vullen voor een specifieke groep of klas, zodat het mogelijk is om te kijken naar de invloed van een bepaalde groep op de opvattingen van docenten.

Implicaties van het onderzoek zijn zowel van theoretische als praktische aard. In het onderzoek is gebruik gemaakt van een model van Pratt om te kijken naar de intenties, opvattingen en strategieën van docenten. De verschillende aspecten van dit model vonden wij eveneens in onze studie, wat gezien kan worden als een bevestiging. Verder geeft het onderzoek inzicht in de manier waarop perspectieven van docenten op elkaar aansluiten. Docenten in het VO hebben gedeeltelijk andere doelen en leggen andere accenten dan docenten in het wetenschappelijk onderwijs, maar een doel als *persoonlijke ontwikkeling* is dominant bij de docenten uit het VO. Dit kan bijvoorbeeld toegeschreven worden

aan de (didactische) opleiding van docenten, en de taken die zij hebben: in het voortgezet onderwijs die van docent en in het wetenschappelijk onderwijs die van onderzoeker en docent. De docenten in het voortgezet onderwijs zijn vaker gericht op de leerling en zijn of haar persoonlijke ontwikkeling. Dit kan te maken hebben met de lerarenopleiding die zij (veelal) genoten hebben, in tegenstelling tot de docenten uit het wetenschappelijk onderwijs die veelal geen didactische opleiding hebben gevolgd. De gevonden verschillen tussen de twee groepen docenten vormen een belangrijk gegeven voor beleidsmakers die zich bezighouden met de aansluitingsproblematiek (van VO naar WO). Behalve de studenten en hun kennis en vaardigheden, spelen ook de docenten een rol in de problematiek en zij dragen er waarschijnlijk op hun manier zelfs aan bij door verschillende accenten te leggen: in het voortgezet onderwijs meer op de (ontwikkeling van de)leerlingen en in het wetenschappelijk onderwijs meer op de inhoudelijke vorming.

Verder kunnen de perspectieven die we in dit onderzoek vonden ook een rol spelen in de nascholing van docenten door aan te sluiten bij de perspectieven die docenten hebben en daarbij passende scholing te bieden. Tevens is kennis van de mogelijke variatie in de perspectieven die docenten hebben van belang in het kader van de lerarenopleiding voor zowel lerarenopleiders als docenten zelf. Om jezelf verder te kunnen ontwikkelen als docent is het nodig te reflecteren op je eigen perspectief. Het is daarom voor opleiders van belang om docenten te helpen hun perspectief te expliciteren (Pratt, 1998), zodat docenten op basis daarvan gestimuleerd kunnen worden om zichzelf verder te ontwikkelen, bijvoorbeeld door systematisch te reflecteren op hun eigen praktijk met behulp van actieonderzoek en daarover te rapporteren aan anderen (Ponte, 2002; Simons & Ruijters, 2004).

Summary

The topic of this PhD thesis is teacher's perspectives on self-regulated learning. 'Perspective' is defined in terms of an interdependent trilogy of intentions, beliefs and (perceived) actions which can influence the thinking and acting of individual teachers and can be used to characterize the differences between teachers. In **Chapter 1** the background, the research questions, and the relevance of the study are discussed.

Large-scale innovations in the Netherlands have introduced many and major changes in upper secondary education. The educational innovations have consequences for the number of school subjects and the content of the subjects. In addition, a considerable emphasis is now placed on the skills which learners must master. A number of so-called 'profiles' or combinations of school subjects have also now been formulated for upper secondary school students to choose from as opposed to the former free selection of school subjects for final examination purposes. More important for this study, however, are the consequences of these innovations for the student learning process. That is, an increased emphasis is being placed on self-regulated student learning which means that students must gradually take control of their own learning and thereby the preparation, conduct and evaluation of the learning process (Zimmerman & Schunk, 2001). The assumption was that these innovations would improve the problematic transition to higher education for students. Students would be better prepared for the independence required in university education.

The teacher plays a crucial role in all of these developments as he or she is the one who guides student learning. The current emphasis on self-regulated learning, however, requires the teacher to play a different role and has prompted a shift from the transmission of subject matter to the guidance of learning processes (Vermunt & Verloop, 1999; Bolhuis, 2000). The prototypical 'study house' teacher, for example, has a thorough knowledge of the relevant subject matter but must also combine this with insights into the nature of the student learning process and take advantage of these insights. The result is that the recent educational innovations have direct implications for the behavior of teachers during the teaching process.

Research shows the behavior of teachers in the classroom to be greatly influenced by their perspectives on education (Pajares, 1992; Mathijsen, 2006). In the present study, teacher perspectives on self-regulated learning are the central object of study. Both teachers from secondary education and university education will be investigated. Secondary school teachers are investigated because they are supposed to foster and improve the self-regulated learning skills of students. University teachers are investigated because they expect and require students to learn in a self-regulated manner. Considerable similarities or differences between these two groups of teachers can have major consequences for the practice of teaching and, more specifically, the 'fit' between secondary and post-secondary teaching practices. Next to the possible differences between teachers from secondary and university education, we were also interested in the

possible relation between the school subjects and disciplines and the perspectives teachers report.

In this thesis, answers to the following questions will be sought.

- What perspectives do teachers have on self-regulated learning?
- What are the similarities and differences between the perspectives of teachers in secondary and university education?
- What is the relation between teacher perspectives and the discipline they teach?

Up until now, no empirical studies whatsoever have been conducted on the perspectives of *both* secondary and university teachers. There are nevertheless indications that some basic similarities do exist (Boulton-Lewis, 2004) and also some important differences (Menges & Austin, 2001). Research on the perpectives of both groups of teachers with regard to self-regulated learning, moreover, is completely lacking. Besides, few studies have been conducted on the relation between perspectives and the discipline or school subject teachers work in (Lindblomm-Ylänne et al., 2006). This thesis can contribute to this research.

The research project consists of two separate studies: a small-scale, exploratory, interview study and a large-scale questionnaire study. In the exploratory part of the research project, the emphasis is mainly on identification of the different intentions, beliefs and (perceived) actions which can be part of a teacher's perspective on self-regulated learning. A first attempt is also made to describe the different perspectives of teachers. The results of the first study provide the basis for the design of the questionnaire for the second study where the emphasis is on confirmation of the existence of different teacher perspectives and various aspects of these perspectives (i.e., different intentions, beliefs and actions). The possible existence of relations between different teacher perspectives and the disciplinary backgrounds of the teachers will also be considered.

In **Chapters 2** and **3,** the development of the interview study and the analysis of the interview results are described. In a semi-structured interview, 37 teachers were asked about ideal teaching practices and the role of the learner in their own teaching practices. The results of a pilot study showed that the teachers found it difficult to respond to direct questioning with regard to self-regulated learning. For this reason, an alternative method was developed to help the teachers explicate their opinions about self-regulated learning. A number of metaphors about teaching, learning, and the role of the teacher were selected from the relevant research literature (Ebbens, 1994; Fox, 1983). In such a manner, the teachers were provided a 'trigger' to help them articulate what they consider important. One example of a metaphor is as follows: 'Education is like a journey through the subject landscape with the teacher as the guide for a group of students.' Based on the 'compactness' and the 'inexpressibility' thesis of Ortony (1975), we assumed that metaphors can elicit a world of meaning and help clarify what is otherwise difficult to express. The provision of metaphors

thus offers teachers different starting points for reaction and explanation of their perspectives.

The analysis of the interview data resulted in the identification of six themes, namely: intentions, learning, characteristics of the learning process, learners, regulation and instructional activities. The different themes could then be further divided into four to seven categories each (see Chapter 2). In the search for different perspectives or patterns in the response categories, we discovered two basic themes which appeared to be of particular importance, namely: the learning process and regulation of the learning process. The most important categories associated with the first theme were: a) learning as the building of knowledge and skills (knowledge-oriented) and b) learning as the construction of meaning and the capacity to connect knowledge to other subjects or contexts (meaning-oriented). The most important categories associated with teacher estimates of the regulation of learning were: a) loose which means that the teacher leaves most of the instructional activities to the students themselves, or maybe better leaves the learning activities with the learner and b) strong which means that the teacher controls most of the instructional activities.

Four different perspectives on self-regulated learning could then be distinguished using the aforementioned categories: 1) meaning-oriented and loose regulation; 2) meaning-oriented and strong regulation; 3) knowledge-oriented and loose regulation; and 4) knowledge-oriented and strong regulation. These four perspectives were also found to characterize both teachers from secondary and university education.

Although no differences were found in the perspectives of the two groups of teachers, we suspected that the intentions, beliefs and actions of the teachers with regard to the regulation of learning might differ. We therefore investigated the categories identified for the six themes found to characterize the interview results in greater detail in **Chapter 3**. Both the frequency and content of the quotations assigned to a specific category were investigated for the two groups of teachers. Both major similarities and major differences were then found. For instance, the two groups of teachers both valued student initiative and similarly estimated their control over instructional activities. In contrast, the secondary school teachers focused more on the person of the learner than the university teachers, which meant that the secondary school teachers attached relatively greater importance to the *personal development* of the learners and *pedagogy*. The secondary school teachers also valued *social activities* and the arrangement of a particular *learning environment* for the students more than the university teachers who focused more – in turn – on subject content, the adoption of a *standpoint* (i.e., the attachment of meaning) and the *independent acquisition* of knowledge. The university teachers also viewed learning as a *process* which is never finished and attached greater importance to the *structuring* of learning materials (e.g., summarizing and giving meaning to the learning process) than the secondary school teachers.

In **Chapter 4,** the results of the large-scale questionnaire study are reported. With the aid of the different aspects of the teacher perspectives on the regulation of learning distinguished in the interview study, a questionnaire was developed and administered to around 3000 teachers. A total of 675 teachers

equally spread across secondary and university education completed the questionnaire, a response of 24%. In an exploratory Principal Component Analysis (PCA), we investigated which specific aspects of the perspectives of the teachers could be distinguished. The results for the secondary and university teachers were compared using t-tests and a discriminant analysis. The latter analysis relies on naturally occurring groups and clearly shows which variables best predict 'membership' of one of the groups. The best predictors for belonging to one of the two groups were the scale scores for *opinion, pedagogy* and the *capacities of students*. A higher score on the *opinion* scale meant that the teacher considered student formulation of own opinions about the subject matter to be a critical goal and was found to predict working in university education. A higher score on the *pedagogy* scale meant that the teacher attached considerable importance to the transmission of norms and values while a higher score on the *student capacity* scale meant that the teacher attached considerable importance to the capacities of the students, and these scales were found to predict working in secondary education. The combination of the three scale scores allowed us to predict whether the teacher worked in secondary or university education in 85.3% of the relevant cases.

The data from the questionnaire study were also used to investigate the particular combinations of intentions, beliefs and actions which characterized the different teacher perspectives with respect to the regulation of student learning. In **Chapter 5**, the relation of a particular teacher perspective to a particular disciplinary background on the part of the teachers was also investigated.

Three perspectives on the regulation of student learning could be distinguished, namely: 1) the development-oriented and shared regulation; 2) the knowledge-oriented and strong regulation; and the 3) opinion-oriented and loose regulation. These perspectives partly overlap with the four perspectives described in Chapter 2 but also partly differ from the four perspectives. Common in each perspective is that one of the following specific goals is of central importance: opinion formation on the part of the students, personal develoment of the students or knowledge building by the students. The regulation of the learning process by the teacher could be strong, shared or loose. For two of the perspectives, a specific belief about the nature of student learning was also present. Teachers with a development-oriented, shared regulation perspective on student learning considered learning to be the construction of meaning, the alteration of one's views of reality and the changing of oneself as a person. Teachers with a knowledge-oriented and strong regulation perspective construe learning as the accumulation of knowledge and skills.

In order to investigate possible differences in the perspectives of teachers working in different disciplines, the disciplines and school subjects were divided into 'hard' (e.g., mathematics, science) versus 'soft' (e.g., history, languages) depending on whether one worked from a dominant paradigm or not (Becher & Trowler, 2001). For the university teachers, we also distinguished between disciplines which were 'pure' (e.g., physics, chemistry) versus 'applied'(e.g., computer science, public administration), which means that knowledge application could stand more central in some disciplines than in others.

T-tests on the differences between the teachers from the 'hard' versus 'soft' disciplines showed the teachers from the 'soft' disciplines to prefer a development-oriented and shared regulation perspective on student learning while the teachers from the 'hard' disciplines showed no such preference for a particular perspective.

For only the university teachers, an analysis of variance was also conducted to determine whether the perspectives of the teachers from hard-pure, hard-applied, soft-pure and soft-applied disciplines differed significantly from each other. The results showed the teachers from the soft-pure disciplines to produce higher scores for both a development-oriented and shared regulation perspective on student learning and an opinion-oriented and loose regulation perspective on student learning. The teachers from the hard-pure, hard-applied, and soft-applied disciplines all produced lower scores for these perspectives and thus considered them less important than the teachers from the soft-pure disciplines.

In the last chapter of this thesis, **Chapter 6**, the main conclusions of the questionnaire study are summarized and the results of the two studies are compared. The questionnaire study revealed a teacher perspective which was not detected in the interview study, namely an opinion-oriented, loose regulation perspective on student learning. Furthermore, two of the perspectives identified in the interview study were not found in the questionnaire study, namely a meaning-oriented and strong regulation perspective and a knowledge-oriented and loose regulation perspective. This discrepancy may be due to the methods of analysis used in the two studies. In the interview study, not only the combinations of categories (i.e., patterns) but also the manifestations of the different categories per teacher were examined. In the questionnaire study, only the patterns of categories (i.e., predominant perspectives) were examined. Just how the different perspectives combined per teacher was not investigated.

All of the other differences between the teachers were found to be the same in the two studies. In both studies, secondary school teachers were found to value the goal of personal development on the part of the students more than the university teachers who valued the goal of opinion formation more than the secondary school teachers. Against the background of a recent report on the 'second phase' innovation (*Tweede Fase Adviespunt*, 2005), these results are quite understandable. The connections between secondary and university education are reported to not have improved and university teachers are complaining about a lack of knowledge and academic skills on the part of university students. Under the auspices of the 'study house' innovation, the emphasis in secondary education has shifted to the learning process and learning skills while the focus in university education remains on knowledge acquisition and an academic attitude.

In the final chapter of this thesis, the strong and weak points of the reported studies are also pointed out and suggestions are made for future study. The implications of the findings are also summarized. One strong aspect of the present research is its exploratory nature. An exploratory approach was adopted to do justice to the teachers and their manners of thinking and talking, and this information was taken into account during the development of the questionnaire. Another strong point is that both secondary and university teachers were

investigated within one and the same study. Comparisons of the two groups have been based upon separate studies up until now. Finally, the use of metaphors in the interview study to help the teachers express and explicate their beliefs also constitutes a strong point. One restriction on the present research was the use of self-report instruments to measure both beliefs and actions. Our conclusions are thus based on teacher's self-reports of beliefs and intentions, which were difficult to express.

In future research, the behavior of teachers should be taken more explicitly into account and related to their beliefs in order to identify the consistency or inconsistency of teacher behavior and beliefs. Teachers might also be asked to complete the questionnaire with respect to a particular group or class in order to investigate the influence of certain group characteristics on teacher beliefs.

The results of the present research have both theoretical and practical implications. The model of Pratt was ued to investigate the intentions, beliefs and actions of teachers, and the different aspects of the model were found in our study. The results also provide insight into how the perspectives of teachers resemble each other. Secondary school teachers show partly different goals and emphases than university teachers although there are also many shared beliefs and goals such as the goal of personal development on the part of students, which nevertheless predominates for the secondary school teachers. Such correspondences and differences can presumably be expained by the educations which the teachers receive, the tasks which they have to do, and their roles as mainly teacher in secondary education and both teacher and researcher in university education. The differences found between the secondary and university teachers in the present research have important implications for policymakers. In addition to the students and their knowledge and skills, the teachers themselves may play a role in the continuity problems currently being experienced by emphasizing the *personal development* of students more in secondary education and the academic shaping of students in university education.

The different teacher perspectives identified in the present research can also influence the provision of inservice education. By better connecting training efforts to the perspectives of the teachers, the quality of the inservice education of teachers can be improved. Knowledge of the possible variation in the perspectives of teachers can also be of importance for the training of both educators and the teachers themselves. In order to reflect upon one's development as an educator or teacher, one must first be able to explicate one's perspective on important issues and – for that matter – the perspectives of others. Educators can then connect their perspectives to the perspectives of teachers (Pratt, 1998) and thereby stimulate further development by encouraging teachers to systematically reflect upon their practices for instance by using action research and reporting the results of such systematic reflection to others (Ponte, 2002; Simons & Ruijters, 2004).

Publications

Scientific Publications

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2006). A Breed Apart? A comparison of secondary and university teachers' perspectives on self-regulated learning. *Teachers and Teaching: Theory and Practice, 12 (5), 593-614.*

Manuscripts submitted for publication

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N.(submitted). *Zelfstandig leren: een vergelijking van de perspectieven van docenten in het voortgezet en wetenschappelijk onderwijs.*

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (submitted). *Focus on learners or content? A survey study on teachers' perspectives in secondary and university education.*

Bookchapters

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2006). Secondary and university teachers' perspectives on self-regulated learning. In F. Oser, F. Achtenhagen, & U. Renold (Eds.), *Competence oriented teacher training: Old research demands and new pathways* (pp 219-236) Rotterdam: Sense Publishers.

Other publications

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2006). *De relatie tussen discipline en opvattingen over leren van docenten in het wetenschappelijk onderwijs. Onderzoek van Onderwijs, 35 (2), 32-35.*

Papers

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2001, August). *Secondary and higher education teachers' beliefs about independent learning.* Paper presented at EARLI's preconference, Fribourg, Switzerland.

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2002, May). *Metaforen als manier om opvattingen te expliciteren.* Paper presented at symposium at the ORD, Antwerpen, Belgium.

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2002, September). *Teachers' Conceptions about self-regulated learning.* Paper presented at the ICO Summer School, Rethymnon, Crete.

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2003, September). *Secondary and University teachers' perspectives on self-regulated learning*. Paper presented at symposium at the EARLI, Padua, Italy.

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2005, August). *University teachers' perspectives on self-regulated learning and its relation with discipline*. Paper presented at symposium at the EARLI, Nicosia, Cyprus.

Poster

Oolbekkink-Marchand, H.W., Van Driel, J., & Verloop, N. (2000, September). *Teachers' beliefs about independent learning*. Poster session presented at the Junior Researcher Conference of EARLI, Barcelona, Spain.

Workshop

Van Ginkel, G.V.M., Mathijssen, I.C.H., Oolbekkink-Marchand, H.W., & Niessen, T.J.H. (2003). *Examining teachers' beliefs: why, what and how?* Workshop during ISATT Conference in Leiden, the Netherlands.

Curriculum Vitae

Helma Marchand was born in Waddinxveen, the Netherlands on July 2nd, 1976. She attended secondary education at the Driestar College in Gouda, where she graduated in 1994. From 1994 to 2000 she studied Pedagogy at Leiden University, graduating in the field of Child and Family Studies. Her master's thesis addressed the influence of teacher behavior on students' moral reasoning. In addition, she studied English language and literature, for which she received the certificate of the first year examination. She combined her studies with the presidency of the Christian study association CSFR, and with an editorship of its' national magazine.

From 2000 to 2006 Helma worked as a PhD student at ICLON, Leiden University Graduate School of Teaching. Her research focused on secondary and university education teachers' perspectives about self-regulated learning, which she presented in symposia at both national and international conferences (ISATT, EARLI, and ORD). She followed master classes on *teaching and teacher education, qualitative analysis,* and on *constructing and evaluating questionnaires*. In 2002, she was one of the organizers of the JURE 2002 Conference, organized by and for junior researchers of the European Association for Research on Learning and Instruction (EARLI). In 2003, she was one of the organizers of the first PhD pre-conference of the International Study Association for Teachers and Teaching (ISATT). Helma is currently employed as associate professor (universitair docent) at the ILS Graduate School of Education at Radboud University in Nijmegen, the Netherlands.

Dankwoord

Onderzoek is als een reis, je hebt van tevoren een plan bedacht dat zich telkens wijzigt, je hebt de route uitgestippeld en die blijkt niet te kloppen, je komt allerlei onverwachte valkuilen tegen waar je omheen moet of, als je te laat bent, dwars door heen moet worstelen. Je dwaalt op zijweggetjes die je soms gelopen moet hebben om de hoofdweg weer te kunnen vinden. Maar je doet ook onverwachte ontdekkingen die soms zo voor de hand lijken te liggen als je ze eenmaal hebt opgeschreven.

Het schrijven van een proefschrift is als een reis. Reisgenoten zijn bij zo'n reis een grote zegen. En daarvan kwamen er in de loop van de tijd steeds meer, ieder met zijn of haar eigen perspectief op alle aspecten van het onderzoeksproces. Hierbij wil ik hen graag bedanken.

Dank aan alle docenten die ik mocht interviewen voor mijn onderzoek en die me kennis hebben laten maken met een diversiteit van opvattingen en de daarbij behorende verhalen over de context van school en universiteit. En aan allen die de moeite hebben genomen om de vragenlijst in te vullen. De vele mensen die daaromheen geassisteerd hebben met het uitwerken van de interviews, het coderen en de statistische analyses wil ik heel hartelijk bedanken. In het bijzonder Ben Smit en Prof. Pieter Kroonenberg.

Dank ook aan mijn voorgangers op wie ik altijd terug kon vallen en met wie ik ervaringen kon delen, op deze plaats wil ik Désirée in het bijzonder bedanken voor haar luisterende oor en haar sterke vragen die altijd tot nadenken stemmen. Ik zal met veel vreugde jouw promotie bijwonen! Anneke voor haar voortvarendheid toen ik net aan mijn reis begon, je hebt het begin aanzienlijk vergemakkelijkt en Paulien voor haar begrip en inzichten in het gehele proces en haar hulp bijvoorbeeld op het vlak van kwalitatieve analyse en het (helpen) benoemen van processen die spelen tijdens het schrijven. Ik hoop dat we in de toekomst op onderzoeksgebied kunnen (blijven) samenwerken.

Degene met wie ik het langst ben opgetrokken is tijdens de verdediging gelukkig ook in de buurt, mijn paranimf en goede collega Gisbert. Een meer all-round reisgenoot had ik me niet kunnen wensen, wat hebben we gediscussieerd over onderzoek en alles wat daarbij komt kijken en wat hebben we regelmatig conceptuele desintegratie en integratie op elkaar zien volgen. Het was een fantastische tijd! En natuurlijk wil ik ook de andere reisgenoten heel erg bedanken voor de constructieve feedback, de verschillende perspectieven op onderzoek en de morele support: Ineke, Jacobiene, Mirjam N., Mirjam B., Tamara, Chantal, Roeland, Gerda en Mariska.

Alle leden van de onderzoeksgroep wil ik bedanken voor de intensieve en inspirerende bijeenkomsten en voor de constructieve feedback op onderzoeksopzet, analysemethoden en concept artikelen. Ik heb het bijzonder gewaardeerd. Ook de informele contacten met collegae op het ICLON waren waardevol voor de reis, en boden de benodigde afleiding onderweg. En is er

eigenlijk wel eens onderzoek gedaan naar het verband tussen het houden van pauzes en het vallen van de spreekwoordelijke kwartjes daarna?

Mede-AIO's van allerlei slag en soort, Coralijn, Marlies, Bas, Els, Christiaan, Gwen. Of het nu cardiologie, getaltheorie, Hebreeuwse taal en cultuur of doodgewoon pedagogiek is, ik heb van jullie geleerd hoe je het leven van een AIO moet leven of althans voor lief moet nemen.

En alle vrienden die het AiO-leven van zeer dichtbij hebben gadegeslagen, in het bijzonder Huibertje. De lunches op het FSW waren altijd bijzonder aangenaam ook de gesprekken over de verschillende fasen van het proces, de lerarenopleiding en niet te vergeten het onderwijs in de dagelijkse praktijk. Ik ben vereerd dat je vandaag mijn paranimf wilt zijn.

Dit proefschrift is niet voor niets opgedragen aan mijn mannen. Hun perspectief heeft ervoor gezorgd dat ik de belangrijke zaken in het leven nooit uit het oog verloren ben. Hans, ik ben heel erg blij dat je er altijd voor me geweest bent en me de ruimte hebt gegeven om mijn ding te doen. Ik kom bij niemand liever thuis dan bij jou. Sem, ik heb zo ontzettend van je genoten tussen alle bedrijvigheid door. Ik vin' je zo lief…

IGLON

Leiden University Graduate School of Teaching

PhD dissertation series

Hoeflaak, A. (1994). *Decoderen en interpreteren: een onderzoek naar het gebruik van strategieeñ bij het beluisteren van Franse nieuwsteksten.*

Verhoeven, P. (1997). *Tekstbegrip in het onderwijs klassieke talen.*

Meijer, P. C. (1999). *Teachers' practical knowledge: Teaching reading comprehension in secondary education.*

Zanting, A. (2001). *Mining the mentor's mind: The elicitation of mentor teachers' practical knowledge by prospective teachers.*

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