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

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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 disciplines[13] 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 understand-ding / interpreta-tion
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 purpo-sive, functional	Results in products / techniques
Applied social science (e.g. education, law, social administration 'soft-applied'	Concerned with enhance-ment of semi-profes-sional 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	Hard Applied (e.g. computer n=31	Soft Pure history) N=150	Soft Applied (e.g. law) n=54	F (p)
	Mean	**Mean**	**Mean**	**Mean**	
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.