

AN EXPLORATORY STUDY TO STUDENT TEACHERS' REGULATION ACTIVITIES  
IN A DUAL LEARNING ENVIRONMENT

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## Abstract

University-based teacher education is more and more organized in dual learning programmes in which two learning environments are combined: studying at the university and learning from practice in schools. These programmes often call upon a high degree of self-regulated learning (SRL) in student teachers. However, it is unclear whether these student teachers are capable to regulate their learning to this extent. Student teachers' SRL has hardly been studied and theories on SRL are mostly based on student learning in traditional instructional settings. This paper aims at answering the question: "What kind of regulation activities do student teachers undertake in a dual learning environment to foster their learning to teach?"

In this study, twenty-eight student teachers were asked to describe their learning experiences and corresponding regulation activities in an open question log. Phenomenographic analysis identified a set of categories of description in the data. It is hypothesized that three patterns can be discerned to explain the results. One pattern includes activities towards regulation of the learning process, the other two describe activities towards regulation of teaching behaviour. The results reveal the unique character of student teachers' regulation activities and are valuable for further research into the quality of student teachers' SRL.

An exploratory study to student teachers' regulation activities  
in a dual learning environment

University-based teacher education is more and more organized in dual learning programmes in which two types of learning environments are combined: studying at the university and learning from practice in schools. These programmes often call upon a high degree of self-regulated learning (SRL) in student teachers: they have to self-evaluate their competencies, clarify their learning needs, formulate personal development plans, document their learning progress in a portfolio, reflect on their learning, adjust their learning processes and combine knowledge gained from teaching experiences and university courses. However, it is unclear whether these student teachers are competent enough to regulate their learning processes to this extent, as well as how educational institutes can stimulate the development of this competence. Taks (2003) showed that full student-responsibility in learning practices in teacher education is hard to accomplish, because it is quite difficult for student teachers to formulate meaningful learning goals, accomplish activities adjusted to these goals and reflect on learning experiences in this context.

Yet, to date research into self-regulated learning has focused primarily on student learning in traditional instructional settings. Because of the unique features of the student teachers' learning process, it is urgently needed to obtain scientific knowledge on student teachers' regulation activities in order to find possible ways to stimulate the development of SRL. This paper aims at answering the following question: *"What kind of regulation activities do student teachers undertake in a dual learning environment to foster their learning to teach?"*. Regulation activities are defined here as physical or

mental activities which control or steer cognition, affect or behaviour in order to achieve learning. The study is undertaken from a phenomenographic perspective (Marton, 1986; Akerlind, 2005). As with all phenomenographic research, the aim is to investigate variation in the underlying meaning of, or ways of experiencing, a phenomenon – in this case SRL. The desired outcome consists of a structured ‘space’ of variation, representing the qualitatively different ways of experiencing regulation of the learning process as found in the group of student teachers examined.

### Theoretical framework

Research on SRL during the last decade has provided insight into processes and models of SRL and useful applications of theory. In most theories self-regulation is defined as an active, constructive process whereby learners set goals for their learning and attempt to monitor, regulate and control their cognition, motivation, and behaviour, guided and constrained by their goals and contextual features in the environment (Pintrich, 2000). Research has demonstrated that both teachers and students draw on SRL strategies to cope with situational demands in the classroom (Randi, 2004). However, most of the studies have been focused on student learning, much less is known about (student) teachers’ regulation of their own learning processes.

According to Boekaerts and Corno (2005), for the most part theorists in educational psychology have narrowed the scope of students’ SRL capability through a focus on the academic side of education: namely on learning and achievement goals. This focus on learning goals is too limited to describe student teachers’ SRL, because of the following characteristics of student teacher learning. In a dual learning environment, student teachers learn from many different sources of information and daily practice at

the workplace has a big influence on their learning process. Therefore, the learning process is less linear and predictable than in contexts of academic learning. Furthermore, student teacher learning is more often embedded in activities that have a (working) goal in itself, instead of formulating learning goals and choosing tasks to reach them (Darling-Hammond & Sykes, 1999). Besides, much of that learning is unplanned and serendipitous, and does not have preset objectives or easily identifiable outcomes. Sometimes learning has significance over a very long timescale (Van Eekelen, Boshuizen & Vermunt, 2005). Nevertheless, from the perspective of lifelong learning, and because teachers act as role models for their students (especially since the focus on active and self-responsible learning at secondary schools has become more dominant), it is very important that student teachers during their education become competent in regulation this complex learning process.

Only a few empirical studies into (student) teachers' self-regulation have been conducted. These studies have detected student teachers' conceptions of or attitudes towards SRL (Kremer-Hayon & Tillema, 1999) or have provided suggestions for improving teacher education (Lin, Schwartz, & Hatano, 2005). Some studies have focused on the preferences of (student) teachers for a certain (regulation of) learning style. The results of these studies have shown that student teachers say to rely minimally on self-regulation strategies (Donche, Vanhoof, & Van Petegem, 2003; Van Eekelen et al, 2005). Oosterheert and Vermunt (2001) found five different orientations towards regulation of learning to teach. Four of these strategies differed on the dimension self-regulation versus external regulation and directed towards performance improvement versus directed towards knowledge construction. The fifth orientation

described student teachers holding tenaciously to their own field experience and hardly being able to report on self-regulation (Oosterheert & Vermunt, 2001).

We may conclude that there is some information about the perception to and knowledge about student teachers' self-regulation and their preferred learning style. Student teachers *say* not to rely a lot on self-regulation strategies, but to our knowledge no research has been done about the actual self-regulation activities they undertake.

## Method

### *Context*

This study has been conducted at a post-graduate teacher education programme, meaning that students first have to finish their master's degree in a specific subject and then enter the one-year programme to obtain their teaching degree for secondary education. During their training year, student teachers attend weekly classes at the university, while they are also doing teaching practice at schools or having a paid job as a teacher. Student teachers have much freedom in designing their personal curriculum, based on their prior experiences and concerns. They keep a portfolio in which they make self-evaluations and a personal development plan to direct their learning process. One part of this personal development plan concerns their own responsibility for their learning processes.

### *Instrument*

For the measurement of regulation activities an open question log, called week report, was developed. This instrument asked student teachers to describe six times a self-chosen learning experience and the corresponding regulation activities. Student teachers were instructed to choose a learning experience from the last week and this could be any

kind of experience that was part of their development as a teacher. The instruction asked them to answer every question that was relevant for their learning experience. The questions of the week report were developed based on the conceptual model of Pintrich (2000), which represents a blueprint for the development of new instruments for measuring SRL. The choice for this instrument was based on the results of a pilot study in which four instruments to measure self-regulation in teacher education, including the week report, were compared (Endedijk, Vermunt, Brekelmans, Den Brok & Verloop, 2006). The format of the week report can be found in Appendix A.

To guarantee variation in the learning experience reported, student teachers were instructed to report a minimum amount of learning experiences from one context: At least two week reports were required about a learning experience from a meeting at university and at least one about a learning experience encountered at their practice school. To prevent student teachers from only reporting success stories, also at least one week report had to describe a less successful learning experience, for example when learning was planned, but did not take place.

### *Sample*

Twenty-eight students of the post-graduate academic teacher education programme volunteered in this study. The student teachers were selected with the aim of capturing as much variation as possible in the following variables: Teaching experience, teacher educator, specific subject area and gender. Student teachers who were not willing to participate (mostly because of lack of time), were replaced by other student teachers with the same characteristics. To stimulate student teachers to complete the reports weekly and send them back, they received a weekly reminder by mail and they were called when they did not answer within two weeks. In total 134 week reports were

collected, 18 student teachers completed all six week reports as required, four student teachers quitted after four or five week reports. Two student teachers did not send in more than three week reports and three others did not complete a single report. One week report was excluded from analysis, because the reported experience was not related to learning to teach. The reason for student teachers to stop before finishing all six reports was mostly because of illness, quitting teacher training or lack of time.

### *Analysis*

The data were analysed in an iterative manner, repeatedly reading through the week reports to come to a set of categories covering the space of variation in the reported SRL activities. The first phase of the analysis was becoming familiar with the answers on the questions of the week reports through reading all the week reports several times. During this phase memos were made to store first ideas about student teachers' regulation activities. Marton and Booth (1997) presented three primary criteria for judging the quality of a phenomenographic outcome space: Each category has to reveal something distinctive about a way of understanding the phenomenon; The categories are logically related as a hierarchy of structurally inclusive relationships; and the outcomes are parsimonious – i.e. that the critical variation in experience observed in the data be represented by a set of as few categories as possible. To meet these criteria, a process of continuously cycling between the quotes and the preliminary categories was needed. For this process the program ATLAS.ti was used, which made it possible to have the complete week report visible during the categorization of a fragment to maintain the context-boundness. After every iteration, the preliminary set of categories was critically examined by colleague researchers. Five iterations were needed to reach a stable set of categories, covering the qualitatively different descriptions of self-regulated

learning as reported in the week reports in as few categories as possible. During this process six variables emerged, each representing a different components of the regulation process, around which the set of categories could be structured. All answers on the questions of the week report were coded in terms of the developed set of categories.

### Results

In total 2034 quotes were coded in terms of a set of 42 qualitatively different categories covering the variation in regulation activities found in the reported learning experiences.

These categories could be organized into six different components of SRL:

- The *goal planning and orientation* of the student teacher: whether this learning experience was planned or unplanned and why the student teachers wanted to learn this.
- The *self-efficacy beliefs* of a student teacher what means whether he or she expected to succeed in the learning experience and why the student teachers had this expectation.
- The *strategy* student teachers used for their learning and their motivation to choose this specific strategy.
- *Student teachers' monitoring of the results*, describing the way student teachers knew they learned something.
- *Self-evaluation* of the learning process, about the satisfaction of the student teacher about the learning experience and what they would have done differently next time.
- *Forethought on a new learning experience*, student teachers described whether and how they wanted to proceed with this learning experience.

This paper will not describe the categories of all six components extensively, because of limited space. The first five components will only be globally described. The last component about forethought on a new learning experience, contains most qualitatively different categories and therefore all categories of this component will be portrayed, defined and illustrated by a quote from the data.

#### *Goal planning and orientation*

From the 133 reported learning experiences, 82 were said to be planned and in 78 cases also the motivation of the student teacher to learn about the mentioned topic was pointed out. All answers were coded on two main dimensions. The first dimension involved the description of a judgment of one's own or others' behaviour or competence as a motivation to learn. For example, *"I am not satisfied about my students' discipline in the classroom"*. The second dimension described the way student teachers mentioned a goal to reach. This could involve a goal for their students as well as a learning goal for themselves: *"I want to learn to be a more authoritarian person"*. Student teachers often described one of the dimensions more implicit in terms of *"I want to do it better"* (behaviour is implicit) or *"I am not doing well"* (goal is implicit). Sometimes only a goal or only behaviour was described.

#### *Self-efficacy*

Student teachers provided an indication whether they expected to succeed in the learning experience. In 79 cases student teachers explained their reason for this expectancy. In some cases this reason was based on hope that the learning experience would end positively, a good or bad feeling about it or they just could not imagine that they could fail. But in most cases this expectancy was based on confidence or experience they had with the subject, method of learning or the context in which the learning

experience took place. Another main category was an argumentation related to their own preparation, the efforts they wanted to make or their own qualities. This could be a positive as well as a negative influence, for example: *"I was so uncertain about myself, that I couldn't imagine that this would be a success"*.

#### *Choice of the learning strategy*

In 117 week reports ten different learning strategies were found. The four main learning strategies that were found were learning by doing, learning in interaction (especially in the form of getting feedback), learning by listening or reading and by applying theoretical knowledge. Student teachers reported in some cases also reflection or evaluation in combination with one of these learning strategies, for example: *"I learned this by just trying it and after that evaluating the students' reaction on it"*. The student teachers were also asked to mention why they chose a strategy. In 104 cases this question was not answered, sometimes because the learning experience was unplanned, but often the reason was not clear. Student teachers also answered that it was not a conscious choice or that they were forced to learn it in a certain way, for example by the teacher educator. Only in twelve cases arguments were given for choosing the learning strategy, for example: *"I chose for this strategy, because it didn't cost me a lot of time and I expected good results"*.

#### *Student teachers' monitoring of the results*

The categories about the way student teachers knew they learned something were quite comparable with the categories as described above about the choice of the learning strategy. Student teachers reported that they knew they learned something by experiencing it went well, getting information from (behaviour of) others, by knowing something they didn't know before and again sometimes in combination with reflection

on their own behaviour. Another argumentation was based on the newness of the experience, in some cases student teachers reported that for them something new always leads to a learning experience.

#### *Self-evaluation*

Student teachers gave information about their degree of satisfaction about the learning experience. In 59 cases they were completely satisfied, in 5 cases they were completely unsatisfied and in 36 cases it was something in between. They also reflected on the learning experience to see what they afterwards would have done differently. Some student teachers reported they would have done everything the same or that what they wanted to change was under control of others. In cases they wanted to change things they mostly reported about mistakes they made or problems in the context of the learning process and how they do things differently next time, for example: *"Next time I will ask for a bigger classroom for my lessons"*. In nine cases they reported about possible changes in their way of learning to obtain a better result.

#### *Forethought on a new learning experience*

Student teachers were asked how they wanted to proceed with the learning experience, what kind of new plans they had. Seven different kind regulation activities were identified, which all will be portrayed and explained by a quote from the data:

- Planning concrete new behaviour - Student teachers described a plan in terms of concrete and specific behaviour, almost always directed to a forthcoming situation. The action plan is something different than they did during the learning experience, it is a practical translation of what they learned during the learning experience: *"Next time, I am going to sit on a table in front of the classroom and use more non-verbal behaviour"*.

- Reinforcing behaviour – Student teachers learned something and wanted to keep this experience and stay practicing or doing this. They did not mention a desire to improve, the level of their competence will stay the same. This was done to reach more routine or just to show that what they learned will be a part of their repertoire of teaching behaviour: *“From now on, I will keep opening my lessons in this way so the structure stays clear”*.
- Improving behaviour – The first step into the right direction has been made during the learning experience, but improvement has to be made. The level of their performance on the same topic will increase and this was described in terms of behaviour: *“My intention is to intervene even faster than I did this time, I experienced now that I am able to do this!”*
- Applying theory – Student teachers learned something theoretical or they acquired knowledge about teaching. Their plan is to apply this in practice, but hardly any information was given about how they will do that: *“I have the intention to use these didactics in practice”*.
- Applying and translating theory – The situation is the same as in the category above, but in these cases student teachers think first about how they can translate what they learned to their specific practice: *“I will think about new teaching methods by myself, so not only using those my teacher educator told about in my lessons, but also thinking about different versions”*.
- Formulating new learning goals – The student teachers described a new learning goal for themselves or an ideal situation they wanted to reach. This can be on the same or on a different topic, sometimes in combination with a description of how they wanted to make the first step into this direction: *“I would like to be less like a*

*perfectionist, to be able to focus on more important thing. I want to me a normal perfectionist, not an extreme one".*

- Nothing or no answer – in six cases student teachers did not have or did not describe a new goal or plan to continue with the reported learning experience.

Comparing the categories of these variables shows some recurring elements among the different components of self-regulated learning. First of all, most categories describe regulation activities focused on teaching goals and aimed at regulating teaching behaviour. Not only in terms of what student teachers learned, but also in how they (knew they) learned and how they evaluated their learning. The words “doing” and “behaviour” are frequently repetitive words. Secondly, every component contains a category related to the regulation of the learning process, but this is only a small minority of the reported learning activities. The implications and interpretation of these results will be described in the discussion section.

### Conclusion and discussion

The aim of this study was to identify student teachers’ regulation activities.

Phenomenographic analysis of 133 week reports resulted in a set of 42 qualitatively different categories, representing the ways of experiencing six components of SRL amongst the group of 25 student teachers examined. Our hypothesis is that three patterns of student teachers’ regulation activities can be discerned to explain the results. These will be described below and summarized in Table 1.

The first pattern describes the regulation of a student teachers’ learning process. In these week reports learning goals were described explicitly, eventually including a description of their own behaviour, motivation was given for the strategy choice, and

self-efficacy was based on the learning method or one's own capacities. Not only the learning outcomes, but also the way of learning was monitored and reflected on and new goals were set for a new learning experience.

The second pattern portrays the regulation of student teachers' teaching behaviour initiated by student teachers' desire to show good teaching *behaviour*. Corresponding categories are a motivation for learning because of an explicit judgement of students' behaviour or one's own behaviour in combination with no or an implicit goal and self-efficacy was based on the context or the teaching subject. Monitoring of the learning results happened by 'experiencing it went well'. These cases reported that next time mistakes of the reported learning experience have to be repaired and this resulted in an action plan for the following learning experience.

The third pattern shows the regulation of student teachers' teaching behaviour in order to develop a *personal theory* about what good teaching is. The impetus to learn were student teachers' judgments of their own behaviour in combination with an implicit or explicit learning goal. Their self-efficacy was based on their own expected efforts and they knew they learned something, because they related the results of the experience to a reflection on their own behaviour. This resulted in a plan to improve their behaviour or a description of the ideal situation they wanted to reach.

Table 1

*Three patterns of SRL and corresponding regulation activities*

SRL Component	1SRL of learning process	2SRL of teaching behaviour - improvement	3SRL of teaching behaviour - personal theory
Planning/ orientation	Goal explicit with or without description own behaviour	Goal implicit and description students' or own behaviour	Goal implicit or explicit and description own behaviour
Self-efficacy	Based on learning strategy or own capacities	Based on context or teaching subject	Based on own capacities
Choice of strategy	Learning by reflection and choice is motivated	Learning by doing and no motivation for choice	Learning by doing and evaluating and no motivation for choice
Monitoring	Learning outcomes and own behaviour	Learning outcomes	Learning outcomes and own behaviour
Self-evaluation	Way of learning	Context	Own behaviour
New forethought	New learning goals	Action plan	Plan to improve behaviour or description ideal situation

The categories of the first pattern show similarity with the description of regulation activities of skilful self-regulative learners in academic student learning contexts as described by Schunk & Zimmerman (1998). The last two patterns show resemblance with one of the dimensions found in the study of Oosterheert and Vermunt (2001), namely regulation towards performance improvement versus knowledge construction. Further analysis has to be done to confirm the hypothesis of the existence

of the three patterns and to identify possible relations with context factors. The results show that in this dual learning environment only a small amount of the regulation activities is primarily directed towards student teachers' learning process. Many identified activities focused on regulating teaching behaviour, resulting in different sets of categories than are found in the accounts of self-regulated learning in academic student learning contexts. These patterns of SRL fit more the definition of self-regulation in work environments better. In these learning environments regulation activities are more often directed towards the accomplishments of working-tasks (Randi, 2000).

This study was designed to cover as much variation as possible to obtain an overview of all different kinds of regulation activities. The choice for studying student teachers' of one teacher education institute, may limit the completeness of this study. Therefore we suggest also some extended research to find out whether the results can also be found at other educational institutes with dual learning programmes. The in this study identified set of categories shows the unique character of student teachers' SRL and will be valuable for further research into the quality of student teachers' SRL.

## References

- Akerlind, G. S. (2005). Variation and commonality in phenomenographic research methods. *Higher Education Research & Development*, 24(4), 321-334.
- Boekaerts, M., & Corno, L. (2005). Self-regulation in the classroom: A perspective on assessment and intervention. *Applied Psychology: An International Review*, 54(2), 199-231.
- Darling-Hammond, L. & Sykes, G. (1999). *Teaching as the learning profession : handbook of policy and practice*. San Francisco: Jossey-Bass Publisher.
- Donche, V., Vanhoof, J., & Petegem, P. V. (2003). *Beliefs about learning environments: How do student teachers think, reflect and act concerning self-regulated and cooperative learning in Flanders (Belgium)*. Paper presented at the AERA, Seattle.
- Endedijk, M. D., Vermunt, J. D., Brekelmans, M., Den Brok, P., & Verloop, N. (2006). *Measuring self-regulation in complex learning environments*. Paper presented at the ICO Toogdag, Amsterdam.
- Kremer-Hayon, L., & Tillema, H. H. (1999). Self-regulated learning in the context of teacher education. *Teaching and Teacher Education*, 15, 507-522.
- Lin, X., Schwartz, D. L., & Hatano, G. (2005). Toward teachers' adaptive metacognition. *Educational Psychologist*, 40(4), 245-255.
- Marton, F. (1986). Phenomenography - A research approach to investigating different understandings of reality. *Journal of Thought*, 21(3).
- Marton, F., & Booth, S. (1997). *Learning and awareness*. Hillsdale, NJ: Lawrence Erlbaum.

- Oosterheert, I. E., & Vermunt, J. D. (2001). Individual differences in learning to teach: relating cognition, regulation and affect. *Learning and Instruction, 11*, 133-156.
- Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich & M. Zeidner (Eds.), *Handbook of self-regulation*. San Diego: Academic Press.
- Randi, J. (2004). Teachers as self-regulated learners. *Teachers College Record, 106*(9), 1825-1853.
- Schunk, D. H., & Zimmerman, B. J. (1998). *Self-regulated Learning from teaching to self-reflective practice*. New York: The Guildford Press.
- Taks, M. (2003). *Zelfsturing in leerpraktijken: Een curriculumonderzoek naar nieuwe rollen van studenten en docenten in de lerarenopleiding*. [Self-regulation in learning practices: A curriculum study into new roles of students and teachers in teacher education] Enschede: PrintPartners Ipskamp.
- Van Eekelen, I. M., Boshuizen, H. P. A., & Vermunt, J. D. (2005). Self-regulation in higher education teacher learning. *Higher Education, 50*(3), 447-471.

Appendix A Week report

**WEEK REPORT - For a learning experience at the practice school**

Name:

Date:

*Description of the learning experience with help of the following questions:*

1. **What did you learn?**
2. **Did you have the intention to learn this? If yes, Why did you want to learn this?**
3. **Did you have the feeling that you were going to succeed? Why?**
4. **In what context did the learning take place (think about place, time, presence of others, your mood etc.)?**
5. **How did you learn it? Why did you choose this strategy?**
6. **From whom did you receive or miss help during this learning experiences? Did you ask for it?**
7. **How did you come to realize you learned something?**
8. **What kind of effect did this learning experience have on your self-confidence and motivation?**
9. **What elements of this learning experience did you experience as satisfying? What would you change the next time?**
10. **How will you proceed with this? Are you making new plans?**