Teacher Learning in a Context of Educational Change: Informal Learning Versus Systematically Supported Learning

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Abstract

After certification, teachers do not often receive systematic support in their learning and hence mainly depend on informal learning opportunities at work. The present study addresses the question of if and how supervision makes a difference to teacher learning. In a longitudinal mixed-method study, the learning of one teacher is documented in a year in which she had no systematic support but had to adjust herself to an educational innovation. The authors also studied this teacher in a consecutive year in which she did receive individual supervision. During supervision, the teacher became aware of beliefs and patterns that had previously inhibited her from change. This awareness precipitated significant changes in her beliefs and classroom behavior as well as the way she learned. The findings suggest that professional learning will take place only if a teacher is supported in learning how to deal effectively with personal factors involved in the learning process.

The professional development (PD) of teachers is a perennial issue, about which much has been written in the past decades. In the past, teachers' PD was organized in formal programs aiming primarily at teaching teachers the necessary knowledge to apply in the classroom; however, in practice, teacher learning is more complex. Many studies show that teachers hardly implement the theories they learn in teacher education in their own teaching practices (e.g., Wideen, Mayer-Smith, & Moon, 1998). This problem has been related to student teachers' socialization processes as students in the school system (Hargreaves, 2004) and to the influence of the cognitive frameworks that abound in the teachers' workplaces (Coldron & Smith, 1999; Lasky, 2005). These explanations have led to an improvement of PD activities (cf. Darling-Hammond & McLaughlin, 1995; Lawless & Pellegrino, 2007; Porter, Garet, Desimone, Suk Yoon, & Birman, 2000).

Although effective PD is important to teacher learning, teachers assert that they learn a lot during their everyday work—by *doing* or by *trial and error* (Kwakman, 2003; Lohman & Woolf, 2001)—which has led to increased attention on the impact of teachers' informal workplace learning (e.g., Eraut, 2004; Jurasaite-Harbison, 2008; Marsick & Watkins, 1990). Following Billett (2004), we define informal learning as learning taking place where no PD trajectory or learning community has been explicitly organized to foster teacher learning (cf. Eraut, 2004).

Given teacher claims that their workplace yields significant learning, investigating the efficacy of their informal learning is relevant. In an earlier study, we described 32 experienced teachers' informal learning in the context of an educational reform in which teachers were encouraged to foster active and self-regulated learning (ASL; Hoekstra, Brekelmans, Beijaard, & Korthagen, 2009). This reform required most teachers to change their teaching philosophies and strategies. Interestingly, this study showed that the majority of the teachers did not change, even though they engaged in informal learning activities.

These findings have led to a follow-up study, which is the major focus of this article. This follow-up study zoomed in on the learning process of Nicole, an experienced teacher who had participated in the initial study. Nicole was very inspired by the reform, but her informal learning environment did not support her attempts to change. The quantitative data showed that Nicole's beliefs and behavior had indeed not changed over the course of a year. For the follow-up study, Nicole agreed to receive supervision. In the course of seven supervisory sessions, based on an approach called multi-level learning (MLL), Nicole experienced a major

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transformation, in terms of both cognition and behavior. Studying the process that Nicole went through, both in the year of informal learning and during the period of supervision, may deepen our understanding of how supervision can support teacher learning in the context of educational change.

The main question addressed in this article is, how does formal learning through supervision differ from informal learning in the professional life of a teacher? This question is answered by addressing the following subquestions:

1. What were Nicole's learning outcomes and informal learning activities during the year she did not receive systematic support in her learning?
2. What were Nicole's learning outcomes after the series of supervisory sessions?
3. What aspects of the supervision contributed to achieving these learning outcomes?

The central notion of learning is conceptualized in terms of both cognition and behavior. Research has shown that teachers' behavior is more crucial for student learning than teachers' cognition, but these two aspects influence each other (Wubbels & Levy, 1993). Hence, we consider both changes in cognition and changes in behavior to be important learning outcomes.

Theoretical Framework

Teacher Learning in the Context of Educational Change

Research on educational change has repeatedly shown that many innovations fail (Holmes, 1998). Such failure has been attributed to fragmented and one-size-fits-all PD approaches (Lieberman & Pointer-Mace, 2008); however, there are also other causes. For example, teachers' preconceptions show a remarkable resistance to change (Joram & Gabriele, 1998), in part because their beliefs are firmly rooted in their own experiences as students in the school system (Wubbels, 1992). Preconceptions also shape the way new knowledge is being understood: Teachers tend to assimilate new notions into their existing belief systems and use new language to describe their teaching without really changing the underlying beliefs (Spillane, Reiser, & Reimer, 2002; Yerrick, Parke, & Nugent, 1997).

Even though cognitive aspects, such as beliefs and preconceptions, are important in efforts to support teacher learning, Hargreaves (1998) asserts that a one-sided focus on cognition may not suffice. In attempts to foster educational change "the more unpredictable passionate aspects of learning, teaching and leading . . . are usually left out of the change picture" (p. 558). Hargreaves concludes that the problem of promoting fundamental professional change is first a problem of dealing with the natural emotional reactions to the threat of losing certainty, predictability, or stability (cf. Van

Veen, Sleegers, & Van de Ven, 2005). This relates to the identity of teachers and concurs with what Day (1999) calls the "personalized nature of teaching" (p. 94). Palmer (2003) also maintains that education is primarily a human endeavor and that teacher education should, therefore, address the person of teachers, including their spirituality and *self*.

Cognition, Emotion, and Motivation

Teaching is not only a matter of cognition; emotions also play an important role (Day & Leitch, 2001; Hargreaves, 1998; Sutton & Wheatley, 2003). Indeed, many psychologists emphasize that cognition and emotion are strongly interrelated and that there is an underlying cognitive structure of emotions (Epstein, 1988; Ortony, Clore, & Collins, 1988). Findings in neurobiological studies also indicate that cognition is interwoven with emotion (Gray, 1990; Immordano-Yang & Damasio, 2007).

Other researchers emphasize that in addition to emotion, motivational aspects such as basic needs (Dolk, 1997; Evelein, Korthagen, & Brekelmans, 2008) and ideals (Palmer, 1998) play a role in teaching. This concurs with psychological theories on human motivation (e.g., Deci & Ryan, 2000). Thus, when we analyze the practice of teaching, the sources of a teacher's behavior are quite complex: Separating the cognitive and noncognitive aspects of behavior may be artificial.

Further complicating any efforts to study teaching behavior is the fact that human behavior results from unconscious sources and is mainly rooted in basic bodily experiences (Lakoff & Johnson, 1999). Research in neuroscience suggests that decisions are made unconsciously, before our conscious mind thinks we make such decisions deliberately (William, 2006). Brain researcher Gazzaniga (1999) points toward this phenomenon: "Major events associated with mental processing go on, measurably so, in our brain before we are aware of them" (p. 73). As a result, it is stated that emotion is integral to human functioning as emotion is strongly linked to the primary decision-making process (e.g., Damasio, 1994, pp. 83-84). In sum, a strong separation between cognition and affect is not possible and counterproductive if one wishes to support teachers in their development.

Reflection in Teacher Learning

An important question is how teacher learning can be promoted if we take these findings seriously. During the past decade, some promising PD approaches have surfaced in the literature (Darling-Hammond & Richardson, 2009; Whitcomb, Borko, & Liston, 2009), such as peer coaching (Zwart, Wubbels, Bergen, & Bolhuis, 2009) and professional learning communities of teachers (DuFour & Eaker, 1998; Sergiovanni, 1994). Underlying such approaches is the principle of promoting teachers' reflection within their social contexts, for example, through mutual coaching or supervision. The common premise of these approaches is that through reflection teachers

make the unconscious conscious and analyze the reasons for their behavior.

The concept of teacher reflection has its origins in the work of Dewey (1933/1998) and has become an important theme in teacher education (Calderhead, 1989; Hatton & Smith, 1995; Jay & Johnson, 2002; Schön, 1983; Zeichner & Liston, 1987). Zeichner and Liu (2010) note that the concept of reflection is sometimes misused for simple means-end thinking, aimed at quickly answering the *what-to-do question*. However, most reflection models include a phase in which the teacher becomes aware of both the essential aspects and the contextual factors of the situation under reflection. Based on an empirical study into student teachers' reflective activities in learning how to teach, Mansvelder-Longayroux, Beijaard, and Verloop (2007) conclude that a distinction can be made between *action-oriented reflection* and *meaning-oriented reflection*. Although the action-oriented reflection focuses on what to do and what works, meaning-oriented reflection is aimed at understanding why situations evolve as they do. Meaning-oriented reflection helps teachers make professional judgments when faced with dilemmas. The teaching profession is full of *dilemmas* (Berlak & Berlak, 1981) and *paradoxes* (Palmer, 1998), and there is never one single best reaction to difficult classroom situations. In empirical studies into teachers' learning in the workplace, Hoekstra et al. (2009) found that those teachers whose beliefs did change over the course of a year engaged in meaning-oriented reflection more frequently than those whose beliefs did not change.

It is interesting to note that in the reflection process, the process of meaning making is often triggered by a problematic, troublesome, or otherwise negative situation (Schön, 1983). Psychological research has shown that it may be more effective if people reflect on aspects that have a positive meaning to them (e.g., Fredrickson, 2002). This suggests that reflection on one's successes and finding explanations for positive experiences might be much more beneficial to professional learning. The principle of using positive aspects of teaching practice for reflection is utilized in several approaches aimed at promoting human growth, such as *appreciative inquiry* (Cooperrider, Whitney, & Stavros, 2008) and the *solution-focused approach* (Rae & Smith, 2009).

Identity, Self-Knowledge, and the Role of Dialogue

In supporting teachers' PD, it is also important to pay attention to the roles of identity, self-knowledge, and dialogue. Around the start of the new millennium, attention moved toward reflection by teachers on their own *professional identity*, which is not surprising as views of the role of the teacher rapidly shifted from teaching as transferring knowledge to teaching as facilitating learning. This paradigm shift has precipitated some fundamental shifts in response to the question, who am I as a teacher? Tusin (1999) states, "Behavior is a function of self-concept, which makes self-concept an essential aspect of teaching and learning to teach" (p. 27). Hamachek (1999) concludes that "the more that teachers know about themselves—the private curriculum within—the more their personal decisions are apt to be about how to pave the way for better teaching" (p. 209). This makes the development of teachers' *self-knowledge* an important issue.

Kelchtermans (1993) studied the influence of critical life events, phases, and significant others on the PD of teachers. Kelchtermans's findings supported earlier findings by Knowles (1988), who introduced the biographical transformation model to explain the influence of life experiences with significant others on the development of a teacher. Kelchtermans concluded that teacher identity is largely colored by personal events and individual relationships, especially with important others.

Messages from important others have a strong impact on people's sense of identity (e.g., Bergner & Holmes, 2000). In this respect, the concept of the *dialogical self* is interesting: The dialogue between a person and important others tends to become an inner dialogue within the person (Lewis, 2002). When someone who is important to a person approaches this person as being important, or as having a great potential for change, the person starts to live according to this *status* (Bergner & Holmes, 2000). Hence, the dialogue between a supervisor and a teacher may have a significant influence on a teacher's professional identity. In such dialogues, the psychological phenomenon of *transference* may play a role, that is, the reproduction in the teacher of emotions related to early childhood experiences, especially with the parents (Pipes & Davenport, 1990, p. 151). For example, a teacher may feel fully understood by a female supervisor, whereas as a child this teacher felt a lack of understanding in her mother. In this situation, the teacher may experience strong positive feelings during supervision. If, on the contrary, this teacher experiences a lack of understanding on the part of the supervisor, this may evoke strong negative feelings in the teacher. The strong feelings resulting from transference may, thus, have a positive or negative influence on the supervision. In the case of strong positive feelings, it is important that supervisors be aware of the resulting risk of dependency in the teachers they supervise. Supervisors would have to help them become self-directed learners who can take responsibility for their own learning process.

Multi-Level Learning and the Promotion of Mindfulness and Awareness

Building on the above educational and psychological frameworks, we wanted to utilize a supervisory approach that (a) promotes meaning-oriented reflection; (b) addresses professional identity; (c) takes cognition, emotion, and motivation into account, without creating an artificial dichotomy between these aspects; and (d) builds not only on negative but also on positive experiences. One such approach is multi-level learning (Korthagen & Vasalos, 2005).
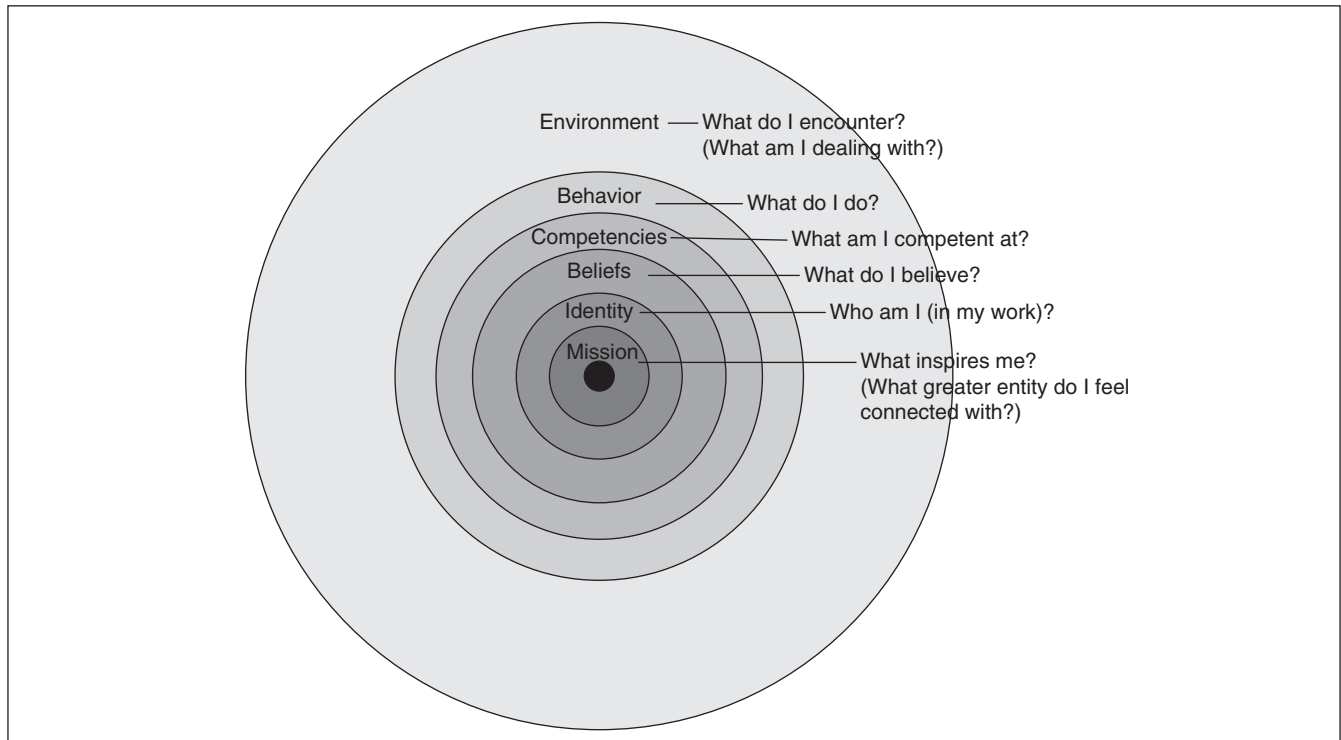
Figure 1. The Onion Model

Basic to MLL is the *onion model* (Korthagen, 2004), which is an adaptation of a well-known model in neuro-linguistic programming (see Dilts, 1990). It outlines six distinct layers in which teacher learning can take place: (a) environment, (b) behavior, (c) competencies, (d) beliefs, (e) identity, and (f) personal mission (sometimes referred to as the layer of spirituality). Figure 1 shows the questions related to each of these six layers.

An important aim of MLL is to connect the outer and inner layers, which means that the teacher's behavior in a professional situation is rooted in his or her sense of identity and mission (ideals, calling, inspiration), which is in line with the above educational and psychological frameworks. This connection supports the enactment of personal strengths in the professional environment. The MLL approach aims at promoting alignment among the six layers, which implies that the behavior effectively responds to the demands of the situation and is personally fulfilling. To reach this goal, teacher reflection is supported by means of individual supervision, based on the following key principles (Meijer, Korthagen, & Vasalos, 2009):

1. Promoting awareness of ideals and personal qualities in the teacher (i.e., the inner potential) relevant to the practical situations the teacher wants to reflect on as a means of strengthening awareness of the layers of identity and mission

2. Identifying internal obstacles to the implementation of these ideals and personal qualities by promoting awareness of disharmony between the onion layers and important teaching dilemmas

3. Promoting awareness of the interrelatedness of cognitive, emotional, and motivational aspects embedded in 1 and 2

4. Promoting a state of awareness in which the person is fully aware (cognitively and emotionally) of the discrepancy or friction between 1 and 2 and the self-created nature of internal obstacles

5. Trusting the process that will take place from within the person

6. Supporting further actualization of the teacher's inner potential

7. Promoting autonomy in using the above six principles

These key principles are based not only on empirical studies in positive psychology, showing important outcomes of a focus on personal strength and positive meaning (Fredrickson, 2002; Seligman, Steen, Park, & Peterson, 2005), but also on psychological approaches to dealing with inner obstacles in people (e.g., Epstein, 1998). Increasingly, these approaches build on the notion of *mindfulness*, being fully aware of what is happening inside and outside oneself. The concept of mindfulness originates from Buddhism but is

significantly influencing Western psychology (Kabat-Zinn, 1990; Weinstein, Brown, & Ryan, 2009) and education (Meijer et al., 2009; Rodgers & Raider-Roth, 2006). Mindfulness can be understood as *full awareness* (Rinpoche, 2007) and differs from conceptual awareness in the sense that "its mode of functioning is perceptual or pre-reflexive" (Brown & Ryan, 2003, p. 823). Mindfulness entails awareness of one's feelings, needs, and bodily reactions and does not necessarily include conceptual awareness.

Essential to the MLL approach is the acknowledgement of the interrelatedness of cognitive, emotional, and motivational aspects (MLL Principle 3). For example, a teacher who believes "I can never deal with this class" needs to be both cognitively aware of the constraining impact of this belief and of how this belief makes him or her emotionally vulnerable. In other words, awareness of this strong connection between cognition and affect is essential to developing the will to reconnect with personal professional strengths (at the layers of identity and mission) and to deconstructing beliefs.

In sum, MLL allows supervisees to reflect on the relationships between the personal and the professional. This is where MLL concurs with the work of Palmer (1998) and others (Kelchtermans, 1993; Van Veen et al., 2005), who advocate taking the person of the teacher seriously. On the other hand, the MLL approach does so without addressing personal biographical issues, hence differing from personal therapy. Therefore, supervisors using an MLL approach need not be trained as therapists but must be willing and able to address personal issues connected to the teacher's role. Contrary to what one might expect, this does not necessarily require intensive supervisor training. Noordewier, Korthagen, and Zwart (2009) show that application of the MLL model in supervision or coaching can be learned in two to three days of training, even when people have no previous experience in supervision. Their study focused on MLL training in six primary schools in the Netherlands, which lasted for two and a half days. At the individual level, the most significant outcomes were higher levels of self-efficacy in teachers regarding the coaching of colleagues and students, the development of new views of learning, and increased awareness of one's own and one another's personal qualities and ideals. At the school level, the study showed a development toward more openness, connectedness, and inspiration.

Other studies on the use of MLL in support of teacher PD include a study by Meijer et al. (2009) in which one beginning teacher was supervised using the MLL approach. Their study showed that the teacher became more fully present while teaching, using her personal qualities, and that she felt more effective as a teacher. The authors summarized the teacher's learning process as an integration of the personal and the professional.

Context of the Study

Our study took place in the context of a national reform in the higher levels of secondary education in the Netherlands. The reforms encompassed changes in the curriculum of all school subjects, such as the creation of a new subject *general sciences*, but most of all it was aimed at introducing a new pedagogy. Schools were encouraged to promote students' active and self-regulated learning. Teachers were supposed to become facilitators of students' learning processes and to assist students in developing their own learning strategies. This new pedagogy was based on three notions: (a) self-regulation of learning, (b) learning as active construction of knowledge, and (c) the social nature of learning (Bolhuis & Voeten, 2004; Putnam & Borko, 1997). For teachers, this new pedagogy implied that they would have to take a step back in controlling students' learning activities and instead would need to encourage their students to reflect on the learning process. This contrasts with teachers' traditional views of subject matter as a "static body of knowledge" that needs to be transferred to students (Bolhuis & Voeten, 2004, p. 78). For many teachers, this new pedagogy required a profound shift in their thinking about teaching and learning as well as their teaching practices. Gradually handing over responsibility for learning to students creates uncertainty in teachers who deeply care about their students' success. Hence, for many experienced teachers, the new pedagogy not only required cognitive changes but also strongly affected emotion and motivation (Van Veen et al., 2005), which concurs with the key principles of MLL.

Method

Initial Study

In the context of this reform, 32 experienced teachers were monitored over a period of 14 months with no systematic learning support (see Hoekstra et al., 2009, for a detailed description of this study). Both at the start and at the end of the study, all 32 teachers filled out a questionnaire regarding their conceptions of students' ASL. The questionnaire consisted of three subscales: (a) student regulation of learning, (b) construction (seeing learning primarily as the construction of knowledge), and (c) student collaboration. The teachers scored all items on a five-point Likert-type scale, ranging from *absolutely disagree* (one) to *absolutely agree* (five). At the measurement moments, Cronbach's alphas of the scales ranged from .82 to .90.

In many research studies, student perceptions of teachers' behaviors have proven to be reliable measures of these behaviors and consistent with observations by experts (D'Apollonia & Abrami, 1997; Wubbels & Levy, 1993). This is why the participants' students also filled out a questionnaire, at both the beginning and conclusion of the 14 months, regarding their teachers' behaviors fostering ASL in

the classroom. The students scored all items on a five-point Likert-type scale, ranging from *this teacher hardly ever does this* (one) to *this teacher almost always does this* (five). Cronbach's alphas of the scales ranged from .78 to .90.

Between the two measurement moments, all teachers wrote six reports of learning experiences regarding ASL, which they emailed to the researchers. Learning activities were related to changes in conceptions and behavior by means of ANOVA (see Hoekstra et al., 2009).

Four of the 32 teachers, Paul, Miranda, Nicole, and Albert, were more closely followed in a multiple case study. From each of these four teachers, six lessons were videotaped. After each lesson, they were individually interviewed regarding their lesson. We also interviewed these four teachers regarding the concerns and challenges of their teaching practice and the conditions for learning they experienced in their direct work environment (see Hoekstra, Beijaard, Brekelmans, & Korthagen, 2007).

To answer the first research question, we drew on our previous analysis of the data available from the initial study. The total data set on Nicole involved a questionnaire measuring her ASL beliefs and a student questionnaire measuring students' perceptions of Nicole's ASL behavior in the classroom. Both questionnaires were administered at the beginning and conclusion of the initial study. Qualitative data on Nicole from the initial study included an interview about major concerns in classroom practices, an interview about her school context as a learning environment, nine emails containing learning experience reports sent at regular intervals, six videotapes of lessons recorded at regular intervals, and six interviews held after each recorded lesson.

During the case analysis of Nicole's data for the initial study, it became apparent that Nicole showed a great willingness to learn and a great potential for change. However, the study showed that during the one-year period, there had been no change in her conceptions or her behavior as measured by our instruments. During the study, Nicole was also observed struggling with new behavior in the classroom. In fact, she expressed frustration about her self-identified inability to change and indicated that she needed support. This is where Nicole differed from the other three teachers participating in our cross-case study. We decided to offer Nicole more formal support in exchange for her participation in a follow-up study.

Follow-Up Study: Formal Support

The support entailed a formal learning trajectory of seven 45- to 60-minute individual supervisory meetings, which took place approximately every three weeks between September 28 and February 7. The meetings took place at the university and were provided by the second author, named Fred, who is an experienced supervisor and teacher educator. The supervisory sessions were based on the MLL approach because Nicole's struggles were not only cognitive but also emotional and

motivational and seemed to take place at the interface of the personal and the professional. Moreover, it appeared that her own negative thinking and ineffective routines limited Nicole's ambitions and ideals. The MLL approach thus seemed an appropriate methodology to support her in her desire to change, although perhaps another supervisory approach might have been equally useful. The study can thus be considered an exploratory evaluation of the possible benefits of MLL-based supervision in the given context.

Follow-Up Study: Data Collection

All seven supervisory sessions were video recorded. After the final session, Nicole once again filled out the questionnaire on ASL conceptions, and her students filled out the questionnaire regarding Nicole's ASL behavior in the classroom. After both the fourth and final supervisory sessions, Nicole was interviewed by the first author (not the supervisor). Both the intermediate and final interviews were semistructured around the following questions, triggered by the onion model:

1. What have you learned through the conversations with Fred
   - About your own ideals?
   - About yourself as a teacher?
   - About your ideas on what good education is?
   - About your competencies as a teacher?
   - About your own teaching behavior in relationship to the students?
   - About the school context you work in?
   - About your own learning process?
2. How did you learn before receiving supervision from Fred?
3. How do you learn since these supervisory conversations with Fred?
4. What in the conversations with Fred made you learn this?

An additional interview with Nicole took place two years after the supervision trajectory had been completed. This interview focused on how the supervisory sessions had influenced Nicole's further PD.

To answer the *second* research question, we drew on the intermediate and final interview data as well as on the ASL beliefs questionnaire and the student questionnaire on ASL behavior, both administered before and after the supervisory trajectory had been completed. To answer the *third* question, we drew on the videotapes of the supervisory sessions as well as on the intermediate and final interview.

Data Analysis

Our *first* question about how Nicole learned during the year of the initial study, in which she did not receive any

systematic support in her learning, was answered using the outcomes of the data analysis procedures used for our initial studies (see Hoekstra et al., 2007; Hoekstra et al., 2009). To answer our *second* question about what Nicole's learning outcomes were after the series of supervisory sessions, the primary researcher and the supervisor independently analyzed the midterm and the final interviews, and the final supervisory session, to identify Nicole's main learning outcomes from the supervision trajectory. In this analysis, we focused on Nicole's own interpretation of what she had learned by looking at core phrases such as "before I did x, now I do y," "I have learned that," and "I never realized x before." Since Nicole talked both about her own and her students' learning, selected excerpts were then grouped by whether they discussed student learning or Nicole's own learning process. After this categorization, the excerpts were further organized around emerging themes. On comparison of the list of the first author with his own analysis, the supervisor agreed on Nicole's main learning outcomes as formulated by the primary researcher. However, he added a number of quotes to the list of learning outcomes, which resulted in a more refined interpretation of the learning outcomes. In particular, the theme "the importance of pointing out students' strengths and emotions" was split into two. This resulted in the following themes regarding student learning:

- Learning how to stimulate reflection (eight excerpts)
- Learning to reflect as being something that takes time (two excerpts)
- The importance of pointing out students' strengths (two excerpts)
- The importance of pointing out students' emotions (three excerpts)

Themes about her own learning:

- Awareness of a number of inhibiting beliefs and barriers (eight excerpts)
- Learning how to learn (eight excerpts)
- Awareness that one's own learning takes time and involves emotions (five excerpts)

Each of these themes is discussed and illustrated in the results section. The outcomes of our analysis were shared with Nicole, who agreed that she, too, saw these as the main learning outcomes.

To answer our *third* question, about which aspects of the supervision contributed to these learning outcomes, we went back to the recordings of the supervisory sessions and the final interview with Nicole to identify processes and supervisor's actions that could be related to the identified learning outcomes. To identify these processes, we relied on what the supervisor considered important processes—based on his longstanding experience with the MLL approach—but also on

what Nicole identified as aspects in the supervision that had helped her to learn. The MLL principles served as a framework for analyzing the supervisory interventions. As Nicole's learning through supervision appeared to be iterative, a matrix of supervisory actions versus learning outcomes was thought to ignore the context and sequence of events. Instead, the supervisor made summarizing descriptions of the process as a whole, which were then discussed by both researchers and compared to Nicole's own account of her learning process. In the discussions, the first author acted as a critical friend, requesting evidence from the observational data and the interviews. In the results section, we present the resulting final account of the supervisory process, based on the observational data, descriptions of supervisory interventions in relation to MLL principles, extensive discussions between the two authors, and Nicole's own account of her learning process.

Results: The Case of Nicole

Background Information Regarding Nicole

At the start of the initial study, Nicole was a 55-year-old biology teacher with 22 years of teaching experience. She taught at a school located in a suburb of a large city in the Netherlands. The school called itself an open Christian school, meaning that respect and solidarity were core values. Most students in the school were from White, middle-class families, from both urban and rural areas.

Nicole's Informal Learning: Outcomes and Learning Activities

This section addresses the first question: What were Nicole's learning outcomes and informal learning activities during the year she did not receive systematic support in her learning?

The quantitative data from the initial study showed that—in comparison to the entire group of respondents—Nicole scored above average on the construction and collaboration scales but below average on the internal regulation (both cognitive and affective student regulation) scale; however, the differences with the mean scores were not statistically significant. Quantitative data from the student questionnaires on her classroom behavior indicated that Nicole scored above average on all three scales. After a year in an informal learning environment, her beliefs and behavior regarding fostering ASL had not changed (see Table 1).

During the year of the initial study, Nicole reported on and was observed trying out many active learning strategies. She regularly let her students work in groups, something she had learned fits with the new pedagogy of ASL. She talked passionately about her vision of the ideal classroom, where students are encouraged to be self-regulated learners; however, Nicole was troubled by what she perceived as her lack of control over what her students were learning when

Table 1. Nicole's Scores on the Questionnaire on Active and Self-Regulated Learning (ASL) Beliefs and Student Questionnaires on ASL Behavior

ASL beliefs and behavior	November 2004	November 2005	Supervisory sessions	April 2007	Difference before and after supervision	RCI interval[a]
ASL beliefs per scale						
Internal regulation	4.05	3.75	October 2006 to	4.40	.65*	.48
Construction	4.14	4.14	March 2007	4.71	.57	.69
Collaboration	4.57	4.57		4.29	−.28	.65
ASL behavior per scale						
Internal regulation	2.30	2.21		2.64	.43*	.29
Construction	2.96	2.99		3.46	.47*	.42
Collaboration	3.34	3.43		3.47	.04	.53

a. If the score difference before and after supervision is larger than the Reliable Change Index (RCI) interval, we can consider this change score to reflect a real change in beliefs or behavior. The RCI interval is different for each scale, as it depends on the reliability score per scale.
*This change score is significant at the p = .05 level and indicates a significant change in beliefs or behavior.

working in groups. Although Nicole wanted her students to think for themselves, she regularly summarized all content for the students using a lecture approach. Her lecturing was aimed at reducing students' uncertainty and her own. By lecturing, Nicole believed she at least "made sure" that the students "know it all." Nicole did not seem to realize that uncertainty is a natural part of the learning process. Nicole's efforts to use active learning strategies were applauded by her colleagues and the school management. From the learning experience reports, it became clear that Nicole's reflection was mostly action oriented rather than meaning oriented. Nicole often felt frustrated, particularly when sensing that her strategies did not motivate the students as much as she had hoped they would. Nicole repeatedly emphasized that envisioning the ideal classroom helped her persevere. In the last lesson recorded that year, Nicole had her students work for themselves. They knew what to do but showed little motivation. In the interview after the lesson, Nicole concluded,

> If their motivation is not triggered from the very first year in secondary school, this current situation can be expected. That is the way it is. I am ready to get some help. How do I turn this to my advantage so that it does actually work, despite the fact that nobody [here at school] cooperates? I do not want to lose my vision. So how do I actually do this? . . . I just want some help!

Nicole's Learning Outcomes After the Supervision Trajectory

This section addresses the second question of this article: What were Nicole's learning outcomes after the supervision sessions?

Quantitative results. The data in Table 1 show that Nicole changed her beliefs regarding students' internal regulation of

their learning. This change was particularly evident in items that related to students' internal regulation of *affective* learning activities, which included items pertaining to,

- The need for students to understand their own emotions to learn better
- The discussion of students' feelings of anxiety
- The discussion of the importance of content and assignments

Table 1 shows that Nicole did not score significantly higher on the construction and collaboration scales. Since Nicole originally scored high on these scales, one might suspect the lack of observed change to be caused by a ceiling effect. However, this seems unlikely since there were teachers with a score of 5.00 on the construction scale. This score implies that if Nicole had become much more construction oriented in her beliefs, we would have measured a statistically significant increase in Nicole's score on the construction scale. This is, however, not the case. Neither did Nicole change much on the collaboration scale, where she actually scored somewhat *lower*, which suggests that our observation of a lack of change was not caused by a ceiling effect of the scale.

According to the student questionnaire, Nicole's behavior in the classroom changed as well, particularly the kind of behavior that fosters students' (a) internal regulation and (b) construction of knowledge. Examples of items that scored significantly higher are,

- This teacher asks us to connect several different aspects of the subject matter with each other
- This teacher makes us think about how we can address feelings of anxiety and uncertainty

Learning outcomes pertaining to fostering ASL, as reported by Nicole. Nicole's self-reported learning outcomes concur with the quantitative data. First, Nicole learned to invite students

to reflect on their own learning processes by asking them open-ended questions. The following excerpt from the final interview describes this change:

Nicole: I notice that I do not preach so much anymore, because that kills the process. . . .
Interviewer: What does preaching mean for you? . . .
Nicole: When I tell them how they have to behave. When I tell them, what they are doing is wrong.
Interviewer: Why does that kill the process?
Nicole: Because it doesn't work. They withdraw within themselves. . . . I noticed that instead I could ask them something like "I see you do this. . . . I do not like that." . . . Then I ask them whether they would like to change that behavior and how they could change it, concretely. What they would like to do about it. Then I see them starting to think.

Second, Nicole reported having learned that students need to learn how to reflect on their own learning processes and that learning should be considered a long-term process. She had always had this vision of the ideal classroom situation, but she did not know what kind of behavior on her part could help her realize this vision. In the final interview, Nicole said,

Now I realize that it does start to flow from my vision to my behavior. I notice that each moment in the classroom when I say "I do not see you do anything, what are you doing?" or "Why aren't you doing anything?" or "What could you be doing right now?" or "How come you are not doing anything?" that I find all these are related to my vision. And also, that this will have its effect in the long run, instead of [what I used to think] expecting an immediate effect in the student.

Third, Nicole reported having learned how to recognize and deal with students' emotions. For example, Nicole explained in the final interview,

I learned that if you point out their feelings when you see how the student is doing [emotionally], and when you point that out, that part of her [the student's] frustration disappears, because I acknowledge those feelings. I learned that from Fred when he sometimes said, "That must have been depressing for you.". . . because it is recognized, that is so extremely important, I learned that. And when you do that with students, then they feel recognized, which happens much too little at school.

Fourth, Nicole learned how to recognize and point out students' strengths. In the last supervisory session, Nicole and Fred looked back on Nicole's learning process. In this context, Nicole said,

As soon as you show students their strengths, they become more aware of them. And that is a positive energy I give them. They can do something with it. That way, they see how their mind works, . . . through these remarks from me, and that I see their strengths. I help them see who they are, and how they can possibly address things. And as soon as you do that, you see their eyes light up, and you see streams of positive energy. I never did that before.

Nicole's learning outcomes regarding her own learning process. There were also important changes in Nicole's way of learning. First, through the supervisory sessions, Nicole became aware of a number of internal and external barriers that had inhibited her previous attempts to align her behavior with her vision. In the intermediate and the final interview, Nicole mentioned the following tendencies and needs, which previously had inhibited practicing strategies that matched her ideals of fostering ASL, and noted that she had overcome them by the end of the supervision:

- Setting her own standards very high
- Needing to be liked as a teacher by the students
- Expecting that change can happen immediately
- A tendency to take control of the classroom interaction, whenever students expressed uncertainty
- A lack of knowledge of modern theories of self-regulated learning
- A one-sided and too enthusiastic focus on trying out different teaching strategies, without taking the students' perspective into account
- Too high expectations of the abilities of students

Second, Nicole had changed her own way of reflecting on classroom situations. Nicole used to try out an array of active learning strategies, and when they did not have the expected effect she would conclude they did not work and would discard the strategy. This type of reflection is action oriented. After the supervision sessions, however, she changed her superficial *does work–does not work* evaluation into a meaning-oriented reflection by looking at what her students were doing, and she learned that students' responses provided a rich source of information:

When a student didn't do what I wanted, I quit. . . . I thought like: "It doesn't work." The whole strategy doesn't work, it is clear, they don't feel like it. I looked at a student from the perspective of "He doesn't do anything, and that is wrong." Now I see: "He is doing something else." Now I look at what they are doing instead, when it's not what I want them to be doing. That opens a world of possibilities to start a conversation with them. When you ask them the right questions, they will be more open and will start doing their work.

Third, Nicole learned that her own learning process takes time and that openness toward students' perspectives involves emotions that need to be addressed. Nicole reflected, "I find it very scary to reflect with a group [of students] on the process. I used to avoid this type of confrontation." She also recognized that learning takes time:

> [If it doesn't happen immediately] it will succeed in the long run. I started a process that I know will succeed sometime. I do not always ask the right questions, I cannot expect myself to do that, because I am still learning. I know I am going in the right direction, I know how I want it, and how it will work, only, I still need to practice. I am on my way.

The Supervisory Process

In this section, by describing the supervisory sessions in more detail, we address the question, what aspects of the supervision contributed to achieving these learning outcomes?

Session 1. After introductions, the supervisor (Fred) provided Nicole with feedback about her core qualities, such as her strong commitment to her work and her enthusiasm. By doing this, he worked according to MLL Principle 1, which stresses the importance of promoting awareness of personal qualities. Next, Fred explained why he had become interested in supervising Nicole, namely, because he had seen her potential in the initial study but felt she needed more support to actualize this potential. Fred hereby communicated trust in the process (MLL Principle 5). During this dialogue, it looked like Nicole *felt seen* as a person. It is possible that this was an example of *transference*, for the video recording of the session shows Nicole's strong emotional involvement. She spontaneously started talking about her struggle with teaching:

> I always want to be innovative in my teaching. But my underlying premise is that students need to want to learn, and need to discover things by themselves. . . . But I have to be careful that I'm not too ambitious. Sometimes students just really don't feel like doing anything.

On scrutiny it became clear that Nicole often started her classes with deliberate enthusiasm about the subject matter, hoping that the students would then become enthusiastic, too. However, as soon as she sensed she was not connecting with her students, she would get disappointed and enter into a negative thinking cycle. Fred helped Nicole identify the thought processes she engaged in during classroom teaching and the inner obstacles involved: her tendency to give up, her habit of reflecting on what went wrong and what to do next time. Nicole realized that by engaging in these thought processes *during* her classroom teaching, she obstructed

herself in showing the behavior necessary to reach her ideal teaching practice in which students become self-motivated, self-directed learners. Hence, this was an example of making an unconscious pattern explicit, in which cognitive, emotional, and behavioral aspects were interwoven. Through this reflection process, she seemed to develop more self-knowledge.

Following up on Nicole's ideal, Fred asked Nicole how it would be if the students were able to become aware of what happened *inside them* at such a moment as part of the process of becoming self-motivated, self-directed learners. Fred said,

> In moments that students seem to give up, you have the tendency to solve this for them, by encouraging them to keep working. . . . Would it be possible that students themselves learn to see within themselves what is happening to them? And that they think about whether they want to continue like this? You may explain to them that if they don't learn how to do this and motivate themselves, they may fail at school. That way you would be coaching them in how to be self-directed learners.

Nicole instantly became enthusiastic and talked excitedly about a classroom situation in which she had challenged a student to consider that her lack of motivation for a task was related to her coming to school unprepared. Together, Fred and Nicole explored the distinction among thinking, feeling, and wanting as well as the notion that people do not change by thinking alone. Nicole said, "So, actually, I would have to say to them, 'When I am saying this to you, how do you feel?'" Although in the past Nicole had been quick to label a situation as a "failure," she began to view seemingly compromised learning activities as "teachable moments" in which the students could learn to self-regulate their own emotions and motivation under her guidance. In other words, Nicole realized that students need to learn to regulate their affective learning processes themselves. She exclaimed excitedly, "Okay, okay! Yeah, I really like this!" We hypothesize that this was an important phase in her development toward a new professional identity.

Looking back in the final interview, Nicole explained,

> My enthusiasm itself also inhibited me. My enthusiasm was aimed at creating new assignments to promote active learning, rather than on whether the students would like different methods. . . . Instead, I learned that I can shape my enthusiasm for the subject matter in several ways, for instance, the way I do it now, aided by Fred's strategies, is also a form of enthusiasm which is more aimed at how to generate processes within the students, while I used to preoccupy myself with the active learning strategy I could create around the subject matter.

Fred also helped Nicole see that through her former behavior of taking over the regulation, she herself had hampered the very process she wanted to support in the students. The supervisor thus helped Nicole to identify internal obstacles to enacting her ideal (MLL Principle 2). To heighten Nicole's awareness of the conflict between her ideal and her tendency to give up as soon as she experienced failure, Fred used the metaphor of building a house. He asked her, "If one brick falls down, do you go on building, or do you start to reflect on this failure and stop building, based on a negative evaluation of the situation?" Nicole quietly acknowledged her tendency to give up too quickly, her voice demonstrating that this insight touched her emotionally. This strongly motivated her to deal with her own ineffective patterns (MLL Principle 3). In other words, Nicole became acutely aware, both cognitively and emotionally, of the self-created nature of the process that obstructed her in trying to reach her ideal (MLL Principle 4).

Session 2. In the second session, Fred began by asking Nicole to reflect on her learning process during and after the first session. Again, it became clear that Nicole's primary focus was on problematic experiences, not on successes. The supervisor showed empathy with her feelings and underlined that in her stories, he observed two core qualities in her: clarity and creativity. Again, it is possible that this empathy and positive feedback stimulated transference.

Nicole brought up two classroom situations in which she tried to stimulate students' self-reflection. In both cases, Nicole had tried to get the students to reflect. Nicole said, "I am becoming more and more aware that I am not succeeding and that is terrible." Fred summarizes the situation for Nicole:

> So you engaged in a conversation with them. You were aware that you fell back into your tendency to tell them how you feel and what they need to do. But in the beginning you had started to ask them the right kind of questions.

Fred urged Nicole to summarize things she *did well* in the situations she brought forward and what was *good* about them. He observed again that Nicole primarily tended to *think* about her experiences and did not reflect much on her feelings and on what she wanted: her ideal. He asked Nicole about how she felt in the interaction with the students and pointed out how these feelings influenced her behavior toward the students. Using the principle of focusing on positive meanings, Fred asked what an ideal situation would have looked like, but more than once she did not really answer the question. Finally, Nicole explained, "In an ideal situation, the students would have returned to their work and changed their behavior. And one student, Jack, actually said that." Fred exclaimed, "Oh? So in this situation, Jack acts in the ideal way, but you are also faced with a problem, and you choose to focus on that problem." Following MLL Principle

4, the supervisor helped Nicole to realize and *feel* the friction between her ideal and her actual behavior, which is another example of promoting her self-knowledge. He said, "How could you have strengthened further reflection in Jack?" When Nicole did not respond, Fred explained that what he was doing is fostering reflection in Nicole by asking her about her ideal. He stressed that Nicole could have similarly asked the students about their ideal situation. Nicole put her forehead in her hands resting on the table. At this moment, Fred asked, "What is happening? I see you do this" while mirroring her behavior. Nicole sighed and said, "Oh how stupid, this makes so much sense." Fred said, "We are all, especially in education, so used to looking at problems, not at strengths and opportunities. You could have asked Jack to explain himself, and the other students would have heard the opinion from a peer." Nicole clapped her hands, raised them, laughed, and said, "What a lost opportunity! I am indeed inclined to look at the problem areas and treat them as problems." This is an example of developing more self-knowledge. Her face showed a somber expression. After being quiet for a few moments, she explained her somber expression: "I am now starting to see all those moments that have triggered me to address problems, instead of focusing on what goes well." Nicole showed emotion as she began to realize that she was obstructing not only her own but also her students' potential (MLL Principle 4). In the final interview, Nicole said about this part of the supervision,

> And then I considered together with Fred what kind of limitations there were, and what kind of limiting thoughts I had. In very concrete terms, and I remember clearly we did that, and it was very confrontational.

Gradually, the supervisor shifted the attention to supporting behavioral changes in Nicole, such as focusing on students' core qualities instead of problems, sharing her ideals with her students, and supporting them in the systematic development of becoming self-directed learners. For example, at the end of the second session, Fred played the role of a student who seemed to do nothing in Nicole's class and helped Nicole to align her classroom behavior with her new insights. After the role-play, Nicole expressed great enthusiasm, "Great! Interesting! What I do now indeed affects how the student feels and makes him become aware he has the strength to address this!" The supervisor helped her to formulate her new insights and her new view of her role and mission as a teacher, thus aiming at a fundamental identity change. Nicole said, "I will concentrate on what a student can do, and not on what he or she does or cannot do. Students will then better recognize their own strengths and focus on them." Throughout this whole supervision process, the supervisor expressed his trust in Nicole's potential (MLL Principle 5) and supported the actualization of this potential in the concrete situations Nicole and Fred together reflected

on (MLL Principle 6). The supervisor concretely modeled the kind of behavior Nicole wanted to show toward her students. In the final interview, she explained,

> First, after the first two supervisory sessions, I realized it is this manner in which Fred asks questions that allows one to learn. I want to stress that. I learned from him that by asking the students questions and inviting them to answer, they themselves realize where they get stuck and what kind of behavior it is that brings them where they do not want to be. I value greatly Fred asked me such questions. He basically kept asking questions and confirming what I said. That is how I obtained insights I previously did not have.

Sessions 3 to 7. The issues discussed in the remainder of the sessions were similar to those in the first two sessions, but they were discussed in more depth. Much attention was devoted to Nicole's present behavior and specific possible new actions. During this process, the supervisor explicitly modeled interventions such as focusing on thinking, feeling, and wanting, focusing on successes rather than problems, and sharing an ideal with the learner. Regularly, Nicole and the supervisor reflected on these interventions, their influence on Nicole's learning process, and their possible translation to situations in Nicole's classes. Fred and Nicole did several role-plays to promote the transfer to practice and to stimulate Nicole's self-directed professional learning. In the reflection on concrete classroom situations and role-plays, the supervisor emphasized the importance of a long-term strategy for promoting self-directed learning and introduced the idea of making small steps. He stressed that Nicole should not expect immediate, amazing strides and encouraged her to be happy with small successes, regardless of their size. In sum, what Nicole gradually learned through Sessions 3 to 7 was to develop the kind of classroom behavior that was more in line with her ideals and her new insights. This appeared to be a step-by-step development in Nicole, in which the discovery of sometimes small but new possibilities for behavior went hand in hand with getting more insight into the pedagogical principles of active and self-directed learning. Interestingly, she also seemed to become more self-directed. This implies that if any transference had taken place during the sessions, this was used in a positive sense, namely for developing trust in her own strength, and gradually she was supported to find her own new teaching style and become independent of the supervisor's continuous feedback. In the final interview, looking back on how she had learned during the supervision, Nicole responded,

> My vision is very much alive in my head, and it is what keeps me going. It already did before meeting Fred. . . . During the supervisory conversations, I became aware of my limiting thoughts, and experienced that those limiting thoughts caused my behavior not to be in line with my vision, and especially the fact that this flow was inhibited, is in fact very sad. I experienced that as very sad. Because I used to have the hope or idea that there was flow and that my behavior conformed to my vision, and I realized that that wasn't true. And now I realize that it *does* start to flow from my vision to my behavior. . . . And also that this will have its effect in the long run, instead of [what I used to think] expecting an immediate effect in the student.

An important aspect of the final sessions was that the supervisor promoted Nicole's autonomy (MLL Principle 7), encouraging her to reflect on herself and her teaching with the aid of the MLL guidelines so that she would be able to continue her learning process after the supervisory sessions.

Two Years Later

Two years after the supervisory sessions, we asked Nicole how her development had evolved. She told us that she had continued to use her newly acquired skills and insights: "I also keep working on new ideas to foster ASL and I achieve great results with minor interventions. Right now, for instance, I am working on how to coach male students in working together and reflecting on their learning." In addition to continuing her own learning process, Nicole had also started to transform her workplace learning environment: "After I became aware of how I wanted to enact my vision, I realized that there was little support for this kind of learning within my school. . . . I started my own teacher team." Nicole is part of a team of teachers who teach pre-university-level classes (students are 16 to 18). Nicole decided to take courses in MLL. In addition, Nicole and three fellow team members received permission to take a two-year certification program for video interaction supervision. As part of this learning trajectory, the four supervisors in training videotaped all the colleagues from their team and discussed the question, "How can I realize more of my own potential in order for students to realize more of their potential?" In addition, Nicole had begun to use her new insights and skills to coach the student teachers who were doing their practicum in her classes. In sum, Nicole not only learned how to keep learning herself but also successfully managed to transform her learning environment to become more supportive of the learning of all the teachers on her team. She reported, "My God, I learned a lot. It hit the core of my being, and I am glad that this is visible in this research paper."

Discussion

Limitations

Before drawing conclusions about our findings, a number of limitations need to be taken into account. First, we need to

acknowledge the limitations inherent in reporting on the learning process of only one very motivated teacher. We cannot be certain that the findings can be generalized to other teachers and contexts. It might be that the match between the supervisor and this teacher was particularly good, possibly stimulated by the phenomenon of transference, or it might be that the MLL approach suited Nicole particularly well. Other teachers might have experienced the focus on the relation between the personal and the professional as less beneficial or even threatening. Moreover, although Nicole wholeheartedly agrees with our findings, this article is written from a researcher's perspective on the learning process. As we report on a study with only one teacher and no control group, we cannot know for certain that it was the supervision that made the difference in the first place or whether the MLL approach was the crucial ingredient. Perhaps any other form of supervision would have been equally helpful. The main ingredient could even be the amount of attention given to Nicole after a long time of struggling and no support.

Even if we could conclude that MLL-based supervision positively influences teacher development, one might wonder if other teacher educators could also use such an approach. Although long-term training or a therapeutic background do not appear to be necessary for successful MLL-based supervision, some teacher educators might be reticent about employing it. However, MLL is based on a couple of relatively simple principles, and an empirical study (Noordewier et al., 2009) showed that a relatively brief course in MLL strongly promoted teachers' ability to use MLL principles in coaching and supervision. In our view, the most important obstacle to learning to use the MLL principles is that these principles appear to contrast with current habits of practice in teacher education. In general, there seems to be an emphasis on rational thinking about teaching experiences and on developing adequate classroom behavior. The assumption among teacher educators appears to be that dealing with emotions and teacher identity changes a supervisory session into therapy; however, MLL deliberately forgoes biographical issues and is always aimed at PD. There is also a tendency among teacher educators to focus on problems, whereas MLL puts the emphasis on successes and their corresponding positive meanings and helps teachers to connect deeply with their ideals and core qualities. This implies that in teacher education, an important part of MLL training is to *unlearn*, at least partially, prevailing practices.

On the other hand, since the supervisor in our study was one of the developers of MLL with many years of experience and a high level of expertise in supporting teachers' professional and personal growth, it is plausible that supervision by another supervisor with less experience might have had a less significant impact on the teacher in our study.

Despite these limitations, we believe that this study provides indications that individual supervision can help to promote teacher learning in the context of educational change

and that such support may be necessary to overcome personal obstacles. In the remainder of this article, we answer the following questions: How does Nicole's formal learning process differ from her informal learning process, and what are the implications of these differences for our understanding of teacher learning?

From Action-Oriented Reflection on Her Own to Meaning-Oriented Reflection With Students

During the supervisory sessions, the supervisor encouraged Nicole to find out why students were doing what they were doing by simply asking them. Nicole's way of reflecting on situations shifted from a focus on whether a teaching strategy worked or not to a deeper understanding of the situation: a shift from action-oriented reflection *by herself* to meaning-oriented reflection *together with the students*. The present study seems to confirm earlier findings that meaning-oriented reflection in combination with a focus on new ideas and behavior can be related to teacher change (Hoekstra et al., 2009; Mansvelder-Longayroux et al., 2007). Our study adds insights into how teachers may be supported in making this profound shift in the way they reflect. The next section elaborates on this process.

Increased Awareness

The supervisor helped Nicole become aware of the thought patterns obstructing her in working toward her ideal. The concept of conscious awareness plays an important role in theories of informal learning, as authors in this field agree that not all learning may happen consciously and deliberately (Eraut, 2004). Eraut (2004) developed a theory of informal workplace learning that distinguishes learning at several levels of conscious awareness (see also Hoekstra et al., 2007). Our findings suggest that informal learning may not support the level of awareness necessary to bring about the profound changes needed when teachers are required to adopt new ways of teaching. In our observations of Nicole, we identified a *shift in her perception of reality*, mirroring what Marton, Dahlgren, Svensson, and Saljö (1977) describe as the essence of deep professional learning, namely "a change in the eyes through which we see the world" (p. 23). Such development of awareness includes awareness of one's own feelings, beliefs, values, needs, images, and, most of all, their relationships with one's behavioral tendencies (Marton & Booth, 1997). This type of awareness can be related to the concept of *mindfulness* (Kabat-Zinn, 1990; Meijer et al., 2009).

Most theories of teacher learning conceptualize learning as a cognitive and rational process (e.g., Clarke & Hollingsworth, 2002; Schön, 1983). However, our findings suggest that for profound changes to occur, an increase in awareness of one's own inner cognitive and affective processes may be

necessary for the reflection process to become more meaning oriented and in tune with the person of the teacher (Meijer et al., 2009). An informal learning context may not provide the necessary triggers for such an awareness to emerge.

Modeling

The formal learning situation created in the supervision of Nicole offered many opportunities for learning by modeling. In the interviews, Nicole referred several times to the fact that she herself had experienced the impact of certain supervisory interventions and explained how she had made the transfer to her own classroom teaching. Our findings, thus, seem to confirm the importance of a positive learning climate for teacher learning, with excellent teachers as role models (cf. Darling-Hammond & Richardson, 2009; Putnam & Borko, 1997). In addition, we believe that it is essential that role models make their own interventions explicit, as well as the rationale behind the interventions. Lunenberg, Korthagen, and Swennen (2007) call this *explicit modeling* and emphasize the importance of this strategy for promoting the transfer of learning.

The Whole Person: Dealing With Emotions and Ideals

A fourth aspect underlies the three discussed thus far. Nicole tried to change through *thinking about* her experiences, with an emphasis on thinking about problematic experiences. As discussed above, a growing body of literature suggests that this may not promote learning (e.g., Fredrickson, 2002; Korthagen & Vasalos, 2005). Change is not only a matter of rational thinking but also a matter of involving emotional and motivational aspects (Hargreaves, 1998; Van Veen et al., 2005).

In Nicole's case, her feelings of insecurity and frustration impeded her informal learning because she did not know how to deal with these feelings on her own. This confirms Borko's (2004) findings that "research using the individual teacher as the unit of analysis also indicates that meaningful learning is a slow and uncertain process for teachers, just as it is for students" (p. 6). Nicole's supervision seemed to offer her a safe and supportive environment for exploring these feelings and for accepting small failures and feelings of uncertainty as a natural part of any learning process.

Nicole also learned to motivate herself. During the supervision trajectory, Nicole was encouraged to focus on her ideals instead of her problems. Nicole discovered that by imagining her ideal, she could motivate herself to keep learning. This created a shift in her perspective on both her own learning and the learning of her students. Nicole's nonverbal behavior, such as clapping her hands and smiling broadly, illustrates the liberating effects of focusing on her ideals and the positive aspects of a situation rather than focusing on what is problematic. Her liberation allows her to obtain a new perspective, and her responses reflect a full realization of what this new perspective means for herself, her teaching, and her students. These observations concur with theories in positive psychology (Fredrickson, 2002; Seligman et al., 2005) describing how "positive emotions have a complementary effect: They *broaden* people's momentary thought-action repertoires, widening the array of the thoughts and actions that come to mind" (Fredrickson, 2002, p. 122). Hence, teacher educators and others who deliver PD may consider incorporating aspects of positive psychology into their practices.

We believe that awareness of the emotional and motivational dimensions is critical to any attempt to foster teacher learning or to implement educational reform. An increasing number of educators emphasize that considering the teacher as *a whole person* is pivotal in any attempt to change teachers (or oneself as a teacher) and note that too often teacher educators are not mindful of the personal aspects of the teaching. Palmer (1998) concludes that "good teaching cannot be reduced to technique; good teaching comes from the identity and integrity of the teacher" (p. 10).

In general theories of teacher learning, the emphasis has been on the outer layers of the onion model, that is, on teacher behavior, knowledge, and beliefs (e.g., Calderhead, 1996; Clarke & Hollingsworth, 2002; Fenstermacher, 1994; Munby, Russell, & Martin, 2001; Putnam & Borko, 1997; Richardson & Placier, 2001). The inner layers of professional identity and mission have received much less attention. In accordance with views expressed by Day (1999), Kelchtermans (1993), Tickle (1999), Palmer (1998), and others, our findings indicate that teachers' professional behavior is strongly related to their personal life histories, their missions, ideals, and passions, and that support in teacher learning should consider these personal aspects and facilitate developing self-knowledge. Our study shows how teacher learning can be successfully supported by addressing all layers of the onion, in conjunction with clear guidance in reframing beliefs and practicing new behavior. An increased awareness of all layers of the onion and a better alignment of these layers seemed to help Nicole come closer to her ideal way of teaching. We hypothesize that it is pivotal to consider all aspects of teachers as whole human beings, in whom cognitive, behavioral, emotional, and motivational aspects are interwoven in their teaching and learning practices. In our view, the crucial step for supervisors and teacher educators is to acknowledge that PD initiatives should not separate the personal from the professional.

Declaration of Conflicting Interests

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