Developing teacher leadership and its impact in schools

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CHAPTER 5
Increasing the impact of a Master’s program on teacher leadership and school development by means of boundary crossing

The effective transfer of learning in a post-initial Master’s program for teachers requires an intensive process of boundary crossing between universities and schools. In this case study, we investigate how the development and impact of teacher leadership through a Master’s program can be supported by a design that stimulates boundary crossing activities between schools and universities. The case study focuses on 42 experienced teachers from three colleges for vocational education who were promoted to senior teacher positions and participated in a two-year part time in-service Master’s program. Through interviews with the senior teachers, their supervisors and university teachers and through mixed focus groups, data were collected on boundary crossing activities, professional development and school development.

Some of the boundary crossing activities focus on the process of designing and monitoring the program, aiming for strategic alignment and shared ownership between university and school. Boundary crossing activities during the Master’s program focused on increasing the number of boundary crossers by engaging several participants from one school in the program and by engaging supervisors and university teachers in boundary crossing activities.

Although the boundary crossing activities by supervisors and university teachers were limited, the Master’s program served as a catalyst, stimulating the innovation of work practices and the development of new leadership practices. The leadership of the senior teachers initiated a development process that shifted from a formally mandated form of leadership to a more culturally embedded form of leadership. This case study leads to a new understanding of the design criteria for Master’s programs and boundary objects that can facilitate boundary crossing between university and school.

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9 This chapter is based on Snoek, M.; Enthoven, M.; Volman, M; & Kessels, J. (submitted). Increasing the impact of a Master’s program on teacher leadership and school development by means of boundary crossing.
1. Introduction

1.1 Boundary crossing within the context of Master’s programs
The relation between the design of post-initial Master’s programs for teachers and their actual impact on outcomes in schools is complex. A connection is assumed to exist among the design of the learning arrangements; the development of knowledge, competences and skills by the participants in the program; the actual roles, performance and behavior of teachers in the classroom; and the outcomes in schools in terms of student or pupil learning outcomes or school development. This connection is influenced not only by cognitive learning processes on an individual level but also by the complex interrelationship of contexts, purposes and practices in the workplace (Tusting & Barton, 2003).

This complex interrelationship implies that the ‘transfer of learning’ cannot be defined as a one-way process of passing on discrete knowledge and skills learned within a Master’s program to a new situation in the workplace of the school. Instead, the ‘transfer of learning’ needs to be understood as a reciprocal process that involves not only a reinterpretation of the work situation and an adaptation of the new competences to the local context of the school but also a change of the work practices in the school itself (Akkerman & Bakker, 2011; Snoek & Volman, 2014; Tuomi-Grohn & Engestrom, 2003).

In this reciprocal process, two separate activity systems can be identified: that of the school as a working context and that of the university as a learning context (Engeström, 2001; Tsui & Law, 2007, Yamagata-Lynch & Haudenschild, 2009). Each activity system has its own dynamics, focused on its intended outcomes, namely, the learning and qualification of pupils versus the learning and qualification of teachers. Within the context of a Master’s program, teachers who participate as students in the program act as boundary crossers because they move across the boundaries between the activity systems. Within the school, they are teachers working with pupils, and within the university, they are students who aim to obtain a Master’s qualification. Through boundary crossing, ideas from different cultures meet, contradictions between these cultures are resolved, and new meanings are generated (Gutiérrez et al., 1999). Boundary crossers can act as ‘brokers’, introducing new elements from one community of practice to another (Tsui & Law, 2007; Wenger, 1998). In this way, boundary crossing can lead to expansive learning, in which the participants not only develop their knowledge, competences and skills but also reconstruct their own context (Engeström, 2001). The Master’s program can be considered to be a boundary zone, creating a context in which the two activity systems can interact and boundary crossing can take place (Miedema & Stam, 2008; Tsui & Law, 2007). Boundary objects can facilitate the process of expansive learning; these are concrete objects, artifacts or processes that encourage and facilitate interaction between the activity systems (Star, 1989). The Master’s thesis that is part of a Master’s program can be considered to be this type of boundary object.
However, this process of boundary crossing between the learning context and the work context is complex, and expansive learning cannot be taken for granted. In the case study presented in Chapter 4, the Master’s program’s lack of impact on the activity system of the school was explained by program design factors and by school factors. In the program design, the focus was on individual teachers from different schools. This design implied only one boundary crosser from each school, which created a weak context for expansive learning. An analysis of school factors revealed limited expectations from the schools, as several schools considered the Master’s program to be only a tool for individual professional development and not a tool for school development. Studies in the domain of human resources have addressed this issue by emphasizing the ‘corporate curriculum’, the organization’s perspective on a learning design that aims to obtain mutual effects at the level of individual and organizational behavior, bridging individual professional development and school development (Kessels, 1993). A corporate curriculum aims for external curriculum consistency: ‘the homogeneity of the notions of parties involved on what the problem is and how it can be solved by means of educational provisions’ (Kessels, 1993, p. 27). This concept implies that the alignment of aims, the design of the program and favorable conditions for the effective application of newly developed competences in schools are the shared responsibility of the program designers at the university and of key stakeholders in the school.

The notions of boundary crossing and external curriculum consistency suggest that Master’s program designs that intend to stimulate expansive learning need to be based on a strategic alignment between the expectations of program leaders at the university and the key stakeholders at the school, on a shared feeling of ownership and on the possibility of taking themes from the school practice as a topic for further study during the Master’s program. In addition, boundary crossing can be strengthened when it is not restricted to an individual participant who is an isolated boundary crosser. When multiple participants from a single school participate in the program and when their supervisors and university teachers from the Master’s program also actively participate in boundary crossing activities, the potential for expansive learning might be increased.

In the present case study, we take a closer look at a Master’s program that focuses on developing teacher leadership. By encouraging boundary crossing between the two systems of school and university, this program aims to contribute to individual professional development as well as school development.

1.2 Master’s programs and teacher leadership
Master’s programs can prepare teachers for new roles in their schools, varying from becoming a subject or methodology expert who can support colleagues to becoming an innovator of curricula to becoming an inquiring practitioner.
who uses data to improve teaching. These qualities and roles relate closely to the concept of teacher leadership: ‘the process by which teachers, individually and collectively, influence their colleagues, principals, and other members of school communities to improve teaching and learning practices with the aim of increased student learning and achievement’ (York-Barr & Duke, 2004, pp. 287–288). Teacher leaders provide direction and exert influence on colleagues to improve teaching and learning outcomes (Katzenmeyer & Moller, 2009; Leithwood & Reihl, 2005). This influence can be exerted through formally mandated leadership, based on formal positions or roles in the organizational hierarchy of the school, or through non-formal leadership, which is embedded in the school’s culture, and recognizes the dynamic potential of all teachers to exercise leadership as part of their role (Frost, 2012; Kessels, 2012; Lambert, 2002; MacBeath, 2009).

Several studies emphasize the need for building teacher leadership capacity, stressing that developing teacher leadership requires the development of new qualities that are not part of initial teacher education (Frost & Harris, 2003; Murphy, 2005; Ross et al., 2011). Post-initial qualification programs such as Master’s programs could contribute to the development of these leadership qualities. The development and enactment of leadership by teachers who are engaged in Master’s programs implies a change in ‘leadership practices’ in a school. Leadership (both formal and non-formal) needs to be claimed and granted; it requires the development and internalization of new identities, both by leaders and followers (DeRue & Ashford, 2010). In this process, situational elements, such as structure, culture, routines and instruments, and personal elements, such as implicit leadership theories and self-efficacy, play important roles (Spillane, 2006; York-Barr & Duke, 2004).

A Master’s program that aims to change leadership practices in schools needs to address these individual factors (implicit leadership theories and self-efficacy of the program participants) as well as the situational factors (organizational culture and structure).

1.3 Studying the impact of a Masters’ program

To study the effectiveness of a Master’s program, we need to examine the design of the learning arrangement; the development of knowledge, competences and skills by the participants in the program; the changes in the actual roles, performance and behavior of teachers within the classroom and the school; the contribution to school development in terms of changes in work practices and leadership practices; and the individual and organizational factors that influence the connections among these elements. Based on Hackman and Oldham’s Job Characteristics Model (Hackman & Oldham, 1980) and the work of Mayrowetz, Murphy, Seashore Louis and Smylie (2007), the conceptual model shown in Figure 5.1 can be used to illustrate the relation among these elements.
Figure 5.1 illustrates that through design characteristics that focus on active boundary crossing and external curriculum consistency between university and school (1), the Master’s program can contribute both to the qualification of individual participants (2) and to changes in the school culture and structure (6). Both individual development and changes in the school culture and structure (5) result in changes in the workplace in terms of new tasks and roles stemming from the recognition of newly developed qualities (3). Through these new tasks, roles and recognized qualities, the Master’s teachers should be able to exercise leadership in terms of providing direction and exerting influence within their team (4), leading to school development in terms of changes in their daily work practices and those of their colleagues and in terms of changes in the leadership practice within their team or the school as a whole (5). Finally, changes in work practices and leadership practices can influence organizational structures and organizational cultures, which are considered to be moderators for the impact of the Master’s program on school development (6). Thus, a reciprocal process is created in which Master’s teachers themselves can contribute to the creation of favorable conditions for teacher leadership and to a climate that is focused on organizational learning (Snoek & Volman, 2014).

1.4 Objective and context of this study
The objective of this study was to investigate how a Master’s program that focused on teacher leadership and that was designed to strengthen boundary crossing between school and university contributed to individual as well as school development. Based on the conceptual model presented in Figure 5.1, we addressed the following research questions:
1. To what extent and how does the program create and support opportunities for boundary crossing between school and university?
2. What is the impact of the program on individual factors?
3. To what extent do participants experience a redesign of their work that requires the use of leadership competences?
4. What is the impact of this redesign of work on the leadership roles of the participants?
5. What is the impact of these leadership roles on school development in terms of changes in work practices and leadership practices?
6. How do organizational factors influence the impact of leadership roles, and how are these factors changed by the leadership roles of the participants?

The object of the study was post-initial, two-year, part-time Master’s program in teacher leadership competences (Professioneel Meesterschap) that was offered by teacher education institutes in Amsterdam since 2009. The post-initial character of the program implied that participants were experienced teachers who had completed their initial teacher education and who had been teaching for several years; these teachers followed the 60 credit program along with their teaching job. The participants were 42 experienced teachers from three vocational colleges who had been selected and appointed by their employers as senior teachers. Their appointment as senior teachers implied that they joined the Master’s program. The curriculum of the Master’s program was focused on developing the knowledge, skills and attitudes required for teacher leadership. The curriculum had been adapted based on prior experience from the previous case study reported in Chapter 4 to strengthen opportunities for boundary crossing. The aims of the program were closely connected to the ambitions of the colleges in terms of school development; the program was developed and monitored in close cooperation between the university and the vocational college staff; and assignments were designed in such a way that connections between curriculum content and local issues were stimulated, and resulting essays or other products could be shared with supervisors (e.g., team or department head) and colleagues. Between 7 and 18 teachers from each vocational college participated, and HRD staff and supervisors from the vocational colleges were invited to participate in lectures and key sessions on research questions for the participants’ thesis projects.

Two of the four authors of this study were involved in the Master’s program as external advisors to the teaching staff and supported quality improvement of the program.
2. Focus and methodology

2.1 Research design
The study was designed as a collective case study (Stake, 1994). Data were collected with the participants in the Master’s program, who originated from three vocational colleges that offer vocational programs in a wide variety of professional areas for students aged 16 and over. Although the participants followed the same Master’s program, their working contexts differed with respect to organizational structures and cultures. As boundary crossing activities manifested differently in the three contexts, the three vocational colleges could be considered as subcases (see Table 5.1).

School 1 has 12,000 students distributed across different locations and different departments. Each department has a director and several managers; the managers are each responsible for several teams that provide the curricula for a specific vocational program. The respondent from the strategic management level characterized the school as changing from a managerial and hierarchical organization to a learning organization with a focus on teaching quality and staff development. The internal HRD Academy is responsible for providing professional development programs. This HRD Academy is a sparring partner for the university staff team in terms of creating strategic alignment between the course goals and the agenda of School 1. The HRD Academy also plays a key role in arranging group meetings for the 18 senior teachers to discuss their roles and to exchange experiences and expertise (knowledge cafes) and sessions for the senior teachers and management of the school to position the senior teachers and to stimulate a shared understanding of roles and responsibilities.

School 2 is relatively small; it has 5500 students in six locations and several departments. Each department has a director and a number of self-steering teams. Each team is responsible for developing, delivering and assessing its vocational program and for making decisions on task division among team members. Within each team, there are coordinators appointed with special responsibilities. The coordinators meet in school-wide platforms to make adjustments to different programs. The structure of self-steering teams demands high-quality awareness from all staff and a commitment to students and colleagues. Seven senior teachers participated in the Master’s program. The head of the HRM department has been the sparring partner for the university staff team in terms of creating strategic alignment between the course goals and the agenda of School 2.

School 3 has 8500 students in two locations with several departments. Each department has a director and different managers who are each responsible for several teams that provide the curricula for a specific vocational program. The focus of the school’s change agenda is to improve teaching quality in each of the programs. This goal requires leadership and pedagogical professionalism from teachers. The appointment of 17 senior teachers fits with this ambition. A representative of the HRM department and one of the board members have been the sparring partners for the university staff team in terms of creating strategic alignment between the course goals and the agenda of School 3. After the start of the Master’s program, the school faced severe financial problems. As a result, there is a strong focus on efficiency. This focus also applies to the senior teachers: their impact should be as wide as possible, not focusing on one specific team or vocational program but rather aiming for school-wide relevance and impact.

Table 5.1: Characteristics of the three vocational colleges

Through this collective case study, we aimed to gain a deeper understanding of how, in these specific contexts, boundary crossing was experienced...
and understood and how participants, university teachers, supervisors and management in the three schools differed in their perception of the impact of the Master’s program on school development.

2.2 Respondents
Several groups of respondents contributed to the data collection. For the interviews, three participants in the Master’s program were selected from each college. The criteria for selection were that the participants were from different professional areas (health care, economics and technology) and were not lagging behind in their study progress. Eight participants agreed to participate and provided the names of their supervisors within the schools. Other respondents included the university teachers, who in pairs supported the three course groups with mixed participants from the three vocational colleges, and key stakeholders in the area of human resource development (HRD) in each of the colleges.

After being informed of the aim of the interviews and being guaranteed anonymity, all respondents gave their consent for the use of the interview data.

2.3 Instruments
To answer the research questions, we used a number of instruments for data collection (see Table 5.2). Through individual semi-structured interviews, the perceptions of the eight participants and their supervisors were recorded. The university teachers were interviewed in pairs. HRD staff from the three vocational colleges were interviewed to provide the context of the Master’s program in each college.

Along with the individual in-depth interviews focusing on a limited sample of participants, additional data were collected focusing on the impact of boundary crossing by the full group of participants. In a peer group interview with the university staff, boundary crossing and the role of the university teachers were discussed. At the level of each vocational college, a focus group meeting was arranged with the strategic management of the college, two participants and two supervisors (differing from those interviewed), focusing on the perceived impact of the Master’s program on the vocational college as a whole. Finally, six meetings of a monitoring group consisting of university teachers, HRD stakeholders and representatives of participants and supervisors were recorded. All interviews and focus group meetings were conducted in the final semester of the Master’s program. To structure the interviews, we used the conceptual model of Figure 5.1 to identify key concepts and indicators (see Table 5.2). These indicators were used to design the interview protocols and to analyze the interviews.

The interviews were divided between two researchers and lasted 60-90 minutes each. The interviews were recorded and transcribed verbatim.
Data analysis

The indicators listed in Table 5.2 were used as a coding scheme to analyze the interviews. Two researchers performed the data analysis. The coding scheme was discussed between these two researchers to reach agreement on the interpretation of the codes. Using the resulting coding scheme, the interviews were summarized in two ways:

- Each interview was summarized using the coding scheme. These summaries were used to draw individual participant descriptions that combined participant, supervisor and university teacher perspectives. Individual participant descriptions were combined into subcase descriptions in which the interview data from one vocational college were combined. Finally, the three subcases were compared. The two researchers discussed differences in summaries and interpretation until full agreement was reached.
- Additionally, the two researchers coded each interview using MAXqda software for computer-assisted qualitative data analysis. Using these codes, a cross-case analysis was conducted (Miles & Huberman, 1994), combining all responses with a specific code to uncover overall patterns and themes linked to each research question.

The outcomes of the cross-case analysis and the individual participant and subcase summaries were compared to ensure consistency. Based on these two outcomes, overall and subcase patterns were identified.

The subcase patterns of each vocational college were summarized and reported in a focus group interview at each school to create a member check (Creswell, 2012) and to discuss the implications of the outcomes for further policy development within the school. These focus group interviews were used as additional data sources.
<table>
<thead>
<tr>
<th>Research question</th>
<th>Key concepts</th>
<th>Indicators</th>
<th>Research instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1: Master program as boundary object</td>
<td>Course design factors</td>
<td>Strategic alignment/external curriculum consistency&lt;br&gt;Shared ownership&lt;br&gt;Content relevance of course themes for the school&lt;br&gt;Collective approach&lt;br&gt;Boundary crossing by supervisors&lt;br&gt;Boundary crossing by university teachers</td>
<td>Individual interviews with supervisors&lt;br&gt;Individual interviews with HRD staff&lt;br&gt;Focus group interviews at school level&lt;br&gt;Individual interviews with university teachers&lt;br&gt;Focus group interviews at school level&lt;br&gt;Recorded university staff meeting&lt;br&gt;Recorded meetings of monitoring group</td>
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<tr>
<td>Q2: Individual characteristics</td>
<td>Implicit leadership theories</td>
<td>Leadership theories of participants</td>
<td>N= 8 8 3 3 3 1 6</td>
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<tr>
<td>Q3: Characteristics of (redesigned) work</td>
<td>Job characteristics</td>
<td>Changed tasks and responsibilities&lt;br&gt;New roles</td>
<td>x x x x x x</td>
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<tr>
<td>Q4: Application of leadership role</td>
<td>Providing direction (content)</td>
<td>Initiating new developments&lt;br&gt;Giving direction to developments&lt;br&gt;Monitoring and adapting developments</td>
<td>x x x x x x</td>
</tr>
<tr>
<td>Q5: School improvement</td>
<td>Impact on working practices</td>
<td>Impact on content&lt;br&gt;Impact on teaching methodology&lt;br&gt;Impact on knowledge and expertise&lt;br&gt;Impact on structure&lt;br&gt;Impact on culture</td>
<td>x x x x x x</td>
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<tr>
<td>Q6: Organizational characteristics</td>
<td>Organizational structure</td>
<td>Structure&lt;br&gt;Stability</td>
<td>x x x x x x</td>
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<td></td>
<td>Organizational culture</td>
<td>Leadership theories of supervisor and colleagues&lt;br&gt;Focus on learning&lt;br&gt;Mutual trust&lt;br&gt;Recognition, granting and claiming of leadership</td>
<td>x x x x x x</td>
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Table 5.2: Overview of key concepts and data collection instruments
3. Results
In the next section, we present the outcomes of the analysis of the interviews and focus group meetings. In the presentation of the outcomes, we summarize the responses from the different respondents and illustrate these responses with typical quotations from the interviews. In the presentation of the results, the responses from the three schools are only discussed separately when differences arose among the schools.

3.1 Boundary crossing between school and university
The Master’s program was designed in such a way that boundary crossing was stimulated using the design criteria listed in Figure 1. The interviews focused on how participants, their supervisors, their university teachers and other stakeholders perceived this boundary crossing.

Strategic alignment
Boundary crossing had already started in the process of designing the Master’s program. Key stakeholders in human resource development in the vocational colleges and university representatives had contributed to the design of the program in an effort to connect the ambitions of the schools with the aims of the Master’s program. According to the HRD stakeholders of the schools, developments within the schools and their local contexts and expectations from society required new capacities of teachers. Teachers within their schools must be able to work as members of self-steering teams and to assume responsibility for curriculum development, learning results and pedagogical mastery. To support such self-steering teams, senior teachers should play a key role, and Master’s programs should support these senior teachers in assuming that role.

According to all respondents, the boundary crossing during the design phase resulted in a Master’s program that combined and linked professional development at the Master’s level with school development and human resource strategies (such as the differentiation of salaries).

Suddenly, we could take a huge step in terms of lifelong learning and increasing the quality of our teaching. By appointing senior teachers, we could speed up our ambitions (HRD staff, School 1).

Alignment was visible in the similar expectations that the Master’s program participants, their supervisors, the HRD stakeholders and university teachers expressed toward the expected role of the senior teachers as teacher leaders. In these expectations, the role of senior teachers in initiating curriculum innovations, supporting colleagues and advising management was emphasized. During the interviews, relations were drawn between these roles and the necessary leadership qualities, namely, a thorough knowledge of teaching, learning and curriculum design; an inquiring mindset; and an awareness of organizational structures and dynamics.
Shared ownership

This shared understanding was the basis for a shared sense of ownership and collaboration between the schools and the university. To monitor how the aims of the two activity systems of the schools and the university were met, a monitoring group composed of the HRD stakeholders from the three vocational colleges, representatives from the group of participants and supervisors and the team of university teachers was created to monitor progress and to address issues that arose during the Master’s program. This group met six times during the two-year period. Throughout these meetings, an ongoing topic of discussion was the shared responsibility of both the school and the university to challenge the senior teachers to apply their leadership competences within the school. These meetings created an opportunity to monitor progress from the perspective of both the university teachers and the school and to adapt the program where necessary.

The collaborative assignment in the last semester needs to be closely connected to the change agenda of the schools. That connection is not clear enough. It could be improved by stimulating a structured reflection by the senior teachers on that change agenda. Discussion followed on the question whether this collaborative assignment should be arranged in separate groups focusing on one specific school, or whether it should be arranged in mixed groups (Minutes of the monitoring group, November 2012).

This shared feeling of ownership was limited to the participants of the monitoring group, as both the individual senior teachers and supervisors who were interviewed indicated that they had little to no influence on the content of the Master’s program; the negotiation of program content and design had occurred at a strategic HRD level in each school, with little involvement or ownership by individual participants or supervisors.

Content relevance

Most participants and their supervisors indicated that the academic content of the Master’s program was relevant and could be applied in their daily work. In particular, the research project that was designed as a thread running through the program created opportunities to bridge the academic aims and content of the Master’s program and issues in the schools. Most participants felt inspired to share the knowledge they acquired in the program with their colleagues and supervisors and to use this knowledge as a new perspective on daily problems and issues.

He is now working on an essay on learning careers. That is closely connected to our curriculum in which we try to focus on individual learning paths for students. So, yes, it is very relevant, as there are lots of connections! (Supervisor of senior teacher 2, School 1).

However, for two participants, the different aims and expectations of the two activity systems created contradictions and conflicts as they struggled with the
formal requirements of a Master’s-level program in terms of academic rigor. These requirements focus on documented proof of Master-level skills through essays and research papers judged by formal Master’s-level criteria. In their view, this requirement impeded their learning and curiosity and limited the possibilities to connect their learning to their daily practice and that of their colleagues.

Collectivity
The design of the program aimed to engage a larger group of participants from one school in the program, spreading boundary crossing over several boundary crossers. Responses with respect to this element of the program design focused on two aspects: the collective impact of the senior teachers on their organizations and the mutual support within the group of senior teachers.

Supervisors and HRD stakeholders emphasized that the large group of senior teachers generated a critical mass within the schools, as they simultaneously created several ‘breeding places’ for innovation. These senior teachers built a momentum that could not be ignored in the schools. School leaders, department heads, senior teachers and colleagues all realized that by defining a new senior teacher profile with an adjusted salary scale and promoting a group of 42 senior teachers according to this profile, a new subgroup had been created, and questions on their specific role and responsibilities needed to be answered. Although at the start of the program, an initial profile was defined in each school and was used in the selection of the senior teachers, questions on roles and expectations were raised at several levels throughout the two years of the program, creating a continuous awareness of the existence of this new group of teacher leaders.

I believe that it is an added value that there are more senior teachers within our unit, that they are not isolated. This creates movement at different places at the same time (Supervisor of senior teacher 1, School 1).

The senior teachers appreciated the collectivity of the program: they felt supported by their colleagues participating in the program, they extended their network within their schools across teams and departments, and they became aware of the personal qualities of their fellow senior teachers. They also considered their collectivity to be a lever for influencing school-wide policies and for acting as a think tank within their school.

The three schools varied in how they fostered this collectivity. In School 1, the internal HRD Academy played a key role in bringing together the group of senior teachers in knowledge-sharing sessions and in giving them a collective role during internal conferences and management sessions. In School 2, few collective activities were organized, restricting teacher leadership activities mostly to the level of the team or department, whereas in School 3, the senior teachers organized their own shared sessions together with the staff unit for curriculum development.
Boundary crossing by school supervisors
In the design of the program, the aim was to engage the participants’ supervisors in program activities by inviting them to key sessions in the students’ research projects and to guest lectures that were part of the program. In the first semester, collaborative research sessions were organized in which research themes and research questions were discussed between participants and supervisors. These sessions were considered to be fruitful for finding a match in expectations between schools and the university and for developing a shared understanding of local needs and academic criteria for practice-oriented research. After this collaborative start, the supervisors had little involvement in the research projects until the final semester, when concrete outcomes could be shared and the implications for teams and curricula and the possibilities for wider dissemination could be discussed.

According to the respondents, having the supervisors attend guest lectures was considered to be a less effective boundary activity. Although all supervisors were invited to attend guest lectures that were part of the program, most attended only two or three out of the 15 guest lectures. Their motivation to do so was mostly expressed as interest in the wellbeing of their senior teachers and as recognition of their engagement in the Master’s program.

*Actually, it is mostly valuable for him, as a kind of recognition: Oh, my supervisor is willing to travel to Amersfoort just for me!* (Supervisor of senior teacher 8, School 3).

*For me, it is important to get a feeling for what happens there. But it is also a kind of support toward the senior teachers!* (Supervisor of senior teacher 6, School 2).

Attending guest lectures was not considered to be a useful method for personal professional development by the supervisors. According to one of the participants, this might be due to the supervisors’ lack of active involvement in meaningful learning activities. This participant suggested that he would prefer a shared assignment for participant and supervisor that linked the content of the lecture to the local situation at the school. Another participant suggested that the guest lectures might be more effective boundary activities if, in addition to supervisors, other colleagues from her team could participate, providing input for follow-up discussions within the team.

Boundary crossing by university teachers
Boundary crossing activities do not need to be restricted to supervisors and colleagues engaging in activities of the Master’s program, but also can involve university teachers engaging in activities at the school. This type of boundary crossing did not occur. The university teachers were reluctant to see a role for themselves at the school. The design of the program did not provide meaningful boundary activities connecting the university teachers to the school context. As a result, the university teachers had very little information about the actual context of the participants and about their performance and application of Master’s qualities in the workplace.
The only role I see for myself is to support the senior teachers in such a way that they can claim their role within their school, that they can negotiate with the management of their school. It is not our role to intervene directly within the schools (University teacher).

The participants and supervisors had mixed feelings regarding the possible involvement of the university teachers in the school. On the one hand, they had difficulties imagining meaningful boundary activities and noted the risk that university teachers could be seen as external busybodies without real engagement or understanding of the local context, which would threaten the authority of supervisors. On the other hand, more involvement of university teachers in the school context was welcomed, as it could increase the involvement of the supervisor in the Master’s program, could bring more expertise into the school to solve tough problems and could contribute to a stronger fine tuning between university and school with respect to content and the roles of teacher leaders.

We are talking about learning communities and network learning. It should be possible to organize it in such a way that a learning community with a supervisor, two or three senior teachers and a university teacher analyze problems and give feedback to each other (Senior teacher 6, School 2).

3.2 Individual characteristics and redesigned work
This section will focus on research questions 2 and 3: the impact of the Master’s program and boundary crossing on the individual characteristics of the senior teachers and the redesign of their work (in terms of new tasks and roles).

Changes in individual competences, self-efficacy and personal leadership theories
The senior teachers indicate that they have developed their knowledge, competences, skills and sense of self-efficacy with regard to teaching, learning, organization and innovation. They indicate a strong development of their sensitivity to organizational and change processes and the development of their research and analytical skills. Moreover, they have developed an inquiring attitude, a helicopter view and an awareness of the wider context. Their supervisors recognize these new qualities.

For years, I had the feeling of being too far ahead of colleagues. I missed the tools to close that gap and to get them on board. Now, I have acquired these tools, and that feels very good (Senior teacher 6, School 2).

I see a large difference from a half-year ago. At that time, they were very much dependent on the opinion of their supervisors, e.g., on which research topic to choose. Now, they are much more independent, define their own focus and priorities (University teacher).

The senior teachers vary in their individual characteristics and in the development of these characteristics. For one senior teacher, the supervisor
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indicated that the Master’s program has also created confusion and uncertainty regarding a new professional identity and new professional expectations. As a consequence, he realized that his role was to support the development of that new identity and to coach the senior teacher to create situations in which she could assume the leadership role and thus develop confidence.

_The program does exactly what a good educational program should do: create confusion. But that also creates uncertainty. Because of that, she didn’t dare to take authority. And that implies that I have to take a role in this, to support her and to put her in position (Supervisor of senior teacher 4, School 2)._ 

The collective approach that was part of the design of the program was effective in developing a shared understanding of the teachers’ leadership role. This shared understanding contributed to shared and explicit leadership theories, which were characterized by a proactive and independent attitude, self-awareness, initiative and entrepreneurship. Through this collective understanding of their leadership role, the senior teachers are able to avoid pitfalls and to avoid reverting to previous patterns.

_The funny thing is that when some are starting to complain about school structures or cultures, they immediately correct each other: hey, we agreed not to do this anymore! What is the underlying problem and what can we do about it? (HRD coordinator School 1)._ 

The senior teachers realize that their leadership differs from the leadership of formal managers. The senior teachers are explicit in their opinion that they are part of their team, although their senior role grants them more authority. Several participants emphasized that the final responsibility should stay with the manager.

_It is OK that I give direction to this process, but there has to be some kind of controlling and monitoring role for the manager. He is the one that should hold people accountable (Senior teacher 8, School 3)._ 

During the interviews, the senior teachers expressed personal leadership theories. Their conviction is that curriculum innovation cannot be initiated top down but rather that it requires dialogue and shared responsibility at different levels. These teachers see themselves as mediators between different levels in the school, bridging administration and teachers and trying to build mutual understanding.

_The time is over when innovations were pre-cooked by some small taskforce, remote from the daily practice in classrooms. The real change will be in how we will cooperate across internal boundaries. A shared understanding that we will need each other to accomplish something. Education and all the processes around it are so complex that it can’t be arranged and solved at the top (Senior teacher 6, School 2)._
Characteristics of the (redesigned) work
As the management of the three schools realized that the participants at the Master’s program needed sufficient time for their learning process and program assignments, it was agreed that the real start of their new teacher leadership role would be after graduation. This postponement of expectations was most explicit in School 2, where participants, supervisors and management reported that no change of tasks had occurred yet.

I leave them alone for now. That may sound strange, but they already have to do so much … But when they are finished, I have a number of tasks ready (Supervisor of senior teacher 4, School 2).

In the other schools, new tasks had gradually been given to the teachers that were related to the redesign, innovation and coordination of curricula; support and coaching of teams and colleagues; and being a partner for their supervisor. As the selection of the participants in the Master’s program was based on their seniority within their team, most of them had already performed tasks related to coordination, curriculum development or active involvement in projects.

Although there was little change in formal tasks, all respondents indicated that they performed their tasks differently, assuming new roles by using a deepened understanding of theories on teaching and learning; a wider perspective on their team, curriculum and organization; a more inquiring attitude; a stronger focus on sharing knowledge; and through all of this, a stronger sense of self-confidence and authority. The boundary crossing activities stimulated these teachers to see themselves, their tasks and their contribution to their school in a different way.

Before I started this study, I did things differently. I searched for something on the Internet, took some information from national conferences, but that was about it. The study makes me look not only for the theory but also makes me aware of the processes at school and the organization behind it. It makes me sit back to analyze the whole process: are we doing the right things, does everything fit? For me, that is the added value, that stronger awareness (Senior teacher 6, School 2).

3.3 Impact on leadership performance and school development
This section focuses on research questions 4 and 5: the leadership performance of the senior teachers (in terms of providing direction and exerting influence) and the impact of this leadership performance on school development (in terms of changes in work practices and in leadership practices).

Leadership performance
The senior teachers’ new understanding of their leadership role and their contribution to their team led to a change in their performance. Their scope widened as their perspectives on their teaching, their curriculum and their team were enriched with a stronger awareness of the issues and developments in the school as a whole, the workplace and society. Through this wider awareness, the
senior teachers provided direction to their colleagues and supervisors because they felt able to contribute new perspectives, to anticipate external developments and thus to influence the agenda of their team and their supervisor.

I tell my supervisor and colleagues about new developments and opportunities at the national level that are coming and how we have to deal with these; that if we don’t anticipate and make decisions, we will miss opportunities (Senior teacher 6, School 2).

Several senior teachers indicated that their focus shifted from administrative coordination to curriculum leadership. They became less focused on quick solutions to problems. Through a more inquiring attitude, these teachers developed a tendency to analyze problems and to look for relevant literature and theories before jumping to solutions.

We have a very strong tendency to react ad hoc to issues. I learned through those research projects to value what research can mean for our daily practice: that it can create a break in the daily race, that you don’t need to have an answer right away (Senior teacher 1, School 1).

In providing direction, the focus of the senior teachers varied. All senior teachers widened their perspective from their team to other teams within their department, sometimes in close cooperation with other senior teachers within their department. In School 3, the senior teachers were given an explicit role across departments to support teams in the process of curriculum redesign. In the other schools, some supervisors saw a potential opportunity in exchanging senior teachers across departments, but no initiatives had been taken yet. Not all senior teachers shared this ambition to work across departments. Some felt that they lacked the background and knowledge to support teams from other professional sectors.

My professional area is technology. I have no business in health care. We have a different way of thinking and talking. I can take my role within the technology domain. But for other professional areas, there are other senior teachers (Senior teacher 2, School 1).

The senior teachers’ influence focused not only on curriculum content but also on the development and support of colleagues and teams. Several senior teachers realized that they acted as role models to colleagues, both with respect to their teaching and with respect to their focus on theory and their professional development.

It is what they expect. When it comes to new teaching approaches, they look at you. I try to be a role model in this as much as possible. I am aware that I am supported by my school to do this study, so my team should benefit from it (Senior teacher 8, School 3).

With the input from the Master’s program, the senior teachers developed a stronger awareness of the professional development of the team as a whole. They stimulated collaborative discussions on teaching and learning, providing input from theory,
and they tried to coach their colleagues and to emphasize the individual qualities of team members and their contributions to the team as a whole.

*I organize study meetings and write a newsletter. Through this, I make a connection with what is happening outside our school and what is relevant for our teams. In the newsletter, there is a special column for colleagues who follow CPD courses to share this with other colleagues. In this way, people become aware of each other’s qualities and can make use of them* (Senior teacher 1, School 1).

Several senior teachers tried to stimulate the self-awareness of their team, building their capacity as a self-steering team and building a pro-active relationship with their manager, thereby influencing the leadership practices in their school.

*I try to influence the attitude within our team. That people are not sitting back passively, waiting for what will happen to them. That they take the initiative themselves. Our team has now become much more proactive and therefore a much more equal counterpart for the head of our department. This also generates lots of positive energy, and other teams recognize this* (Senior teacher 1, School 1).

**Contribution to school development**

The general strategy of management and supervisors was to limit expectations with respect to the concrete outcomes of the teacher leadership of the senior teachers during the course of the Master’s program. However, both senior teachers and supervisors recognized that during the Master’s program, a wide variety of concrete outcomes that contributed to school development were achieved, both with respect to the work practice and leadership practice within and across teams.

**Impact on the work practice** is reflected in the new curricula that have been developed, sometimes in close cooperation with the work field. Teams have adopted new didactic approaches that use new tools to make teachers aware of their impact on students, developed new strategies to fight early exit from school and used new mentoring approaches, among other activities. Two senior teachers reported that these changes have also resulted in promoting ownership, self-awareness and a pro-active study attitude among their students.

*I realize that the things that I learn, that pro-active attitude, that I share that with my students, that I try to make them aware of how they learn and what they learn. Through this, in one of the groups, half of them decided to accelerate their learning. They realized that they could organize their own curriculum, and they graduated half a year earlier. I realize that by making the things that I consider important more explicit and by showing that in practice, they take their own responsibility much sooner and understand better what they want to learn and why they are here, that they are not dependent on the circumstances, but they themselves can influence these circumstances to a large extent* (Senior teacher 1, School 1).
Senior teachers, supervisors and HRD stakeholders also reported the impact of the leadership performance of the senior teachers on leadership practice within the school, as reflected in the growing self-awareness of the teams. Inspired by the leadership of the senior teacher, teams initiated the innovation of curricula and teaching, became more able to solve problems and developed a positive flow and a stronger focus on team learning. These teachers felt better equipped to discuss their needs and ideas with managers; to develop a greater openness to research, data and theory; and to develop a stronger focus on sharing knowledge. They more systematically considered the feedback of students and initiated renewed discussions on teaching and learning.

The head of our department is a facilitating leader. He wants to know: what do you need, what can I do for you? Many colleagues had problems with that. They wanted him to tell them what they should do. Through my study, I can now recognize this. Now I can say to my colleagues: Look, this is how he works. So we have to make our own plan: this and this is what we want, and this is what he has to do. This really has changed the way we work and cooperate. More and more, we now are working as a team (Senior teacher 2, School 1).

3.4 Changes in the organizational structure and culture
Organizational characteristics are both conditions for the effective impact of Master’s programs on school development and the results of the boundary crossing activities that are stimulated by the design of the Master’s program and the leadership role that is assumed by senior teachers. Organizational structures and cultures are not static but rather can change because of boundary crossing activities and because of leadership initiatives by senior teachers. In their responses, both senior teachers and supervisors highlighted issues with respect to internal boundaries; the role of self-steering teams; the contribution of senior teachers to the wider strategic aims of the school; expectations with respect to the organizational level where the leadership of the senior teachers would have impact; and pressures with respect to accountability measures and financial limitations.

The three schools are large institutions that are characterized by internal boundaries between departments, between teaching staff and administrative staff and between teachers and management. These boundaries had created a situation in which teachers felt dependent on the decisions made by management, where a curriculum innovation unit had taken the curriculum responsibilities from teachers, and where a culture of complaint could blossom. The strategic alignment between the university and the school and the boundary crossing of participants, supervisors and strategic management created a stronger awareness within the schools of the need for leadership roles for teachers that transcend traditional boundaries. The senior teachers themselves contributed to the reduction of boundaries by stimulating exchange between different departments, by stimulating dialogue between teachers and administrative staff and by mediating between teachers and management. In School 3, the senior teachers
initiated a regular exchange with the staff unit for curriculum development to share and strengthen the curriculum development processes.

Within the three schools, the respondents realized that strengthening the teachers’ voice and role in curriculum development requires a change in culture from a hierarchical organization to self-steering teams. Within School 2, the organizational structure was already based on self-steering teams, whereas within the other two schools, initial steps in this direction have been taken. The senior teachers are expected to contribute to the ability of these self-steering teams to assume responsibility and accountability for organizing their work and developing their teaching. The combination of appointing senior teachers and engaging them in the Master’s program is considered to be a catalyst in this process toward self-steering teams.

*I believe that next to the bureaucratic aspects of this organization, I can contribute to a culture where team members can base their work on a stronger sense of self-awareness of their own qualities and expertise instead of on a docile attitude, thinking that they have no choice. But, we are not there yet* (Senior teacher 1, School 1).

This focus on self-steering teams suggests that teams could define their priorities from the bottom up. This possibility appeared to contrast with the overall ambition that senior teachers contribute to the wider strategic aims of the school. This overall ambition was reflected in the responses of most supervisors and senior teachers, which indicated that, after graduation, the supervisors would provide assignments or projects that the senior teacher could or should assume. In School 3, for example, the senior teachers were expected to assume the lead in implementing a new school-wide vision and educational model.

*As a centralized organization, we will always look for some kind of assignment. It has been suggested that senior teachers or their teams should come up with their own suggestions for projects, but I don’t think that is the best idea. I think that managers, the central administrative departments and the school board should take the lead in this* (Supervisor of senior teacher 4, School 2).

This sentiment contrasted with the activities that the senior teachers initiated during their Master’s program, which were not instigated from above but rather were based on their personal and professional observations of quality issues within the daily practice of their teams, of external developments and of the needs of their colleagues.

The organizational structures of the vocational colleges were characterized by different hierarchical levels: that of teams, departments and the school as a whole. The expectations varied with respect to the levels at which the senior teachers could contribute. Within School 3, there was a strong focus on the school-wide impact of the senior teachers, whereas the other schools focused...
on the impact at the team and unit levels. All supervisors considered the senior teachers to be inspiring sparring partners at their own department or team level. At that level, the senior teachers were expected to update their supervisors on theories, research and external developments. Several supervisors expected that the senior teachers would assume particular tasks, especially in relation to coordinating and monitoring curriculum innovations and stimulating the development of self-steering teams within their departments. However, some senior teachers and some supervisors expected the senior teachers to assume roles at the wider school level, even though the organizational structures needed to support the school-wide mobility of senior teachers were not in place. Within School 1, the senior teachers were supported by the internal HRD Academy, which played a key role in strengthening the department heads’ awareness and collective understanding of the strategic role that this group could play within the school as a whole. However, none of the schools considered the senior teachers to be a strategic think tank at the overall school level.

Although the senior teachers were not considered to be a collective factor within the school, School 3 had high expectations for the individual contribution of the senior teachers to the school as a whole. The expectation of the management of this school was that the research projects that the senior teachers conducted as part of their Master’s program would have a potential impact on the entire school. In most research projects, the initial focus was on one specific team or student group, whereas the end phase initiated extension to other student groups or curricula. In three cases, steps had already been taken to implement the outcomes in other teams or departments or even school wide.

His research study focused on the inter-relation between teachers and students. This led to a very positive response within his team. Colleagues considered the tool he developed as very useful to reflect on their relations with students and to discuss this with them. Now, we want to extend it to other teams in small pilots. He will lead these pilots. Eventually, all teams within our school will work in this way (Supervisor of senior teacher 8, School 3).

The pressure in the schools brought by financial limitations and accountability measures from the government created a context within the schools where there was little time for teacher meetings, collegial discussions and reflection. Several senior teachers indicated that they struggled with the organizational focus on control measures, which left little room for a culture based on trust. Because teachers and managers were held accountable, there was a tendency toward justification and window dressing. The senior teachers tried to create a counter balance by addressing this tension, by stimulating exchange and discussions among teachers on teaching and learning, by focusing on team development through coaching and peer review and by stimulating research and inquiry.

Most of these issues reflect an ongoing dialogue on organizational conditions and on the precise roles of senior teachers within schools. This dialogue has
been encouraged through the various boundary crossing activities involving senior teachers, supervisors and university teachers. The senior teachers played a key role in changing organizational conditions through initiatives that connected different levels within the school, crossing internal boundaries. Through collaboration as a group, they tried to strengthen their impact on the level of the school as a whole, stimulating a culture that focused less on control and more on development and trust. Collectively, these teachers tried to manage expectations with respect to their roles; they developed a concrete profile of senior teachers in the final phase of their study that indicated what colleagues, supervisors and the school board should expect from them.

4. Discussion

4.1 Limitations of this study
The use of interviews as the primary source for data gathering created opportunities for a detailed understanding of the respondents’ perceptions of the leadership capabilities developed by the senior teachers, their impact in the schools and how the Master’s program and boundary activities between school and university contributed to this impact. At the same time, the process created limitations, as only eight participants and their supervisors were interviewed. In addition, the use of self-reporting activities as the primary source of data gathering may limit the reliability of the findings. Through triangulation by interviewing senior teachers, their supervisors and their university teachers, we tried to increase the reliability of our findings. Furthermore, the combination of interviews with the HRD stakeholders and university teachers and the focus group interviews at each school provided an opportunity to construct a complete picture for each school.

Finally, the design of the study was such that the Master’s program and the associated boundary crossing activities were studied as an isolated intervention within the schools. Within the dynamic contexts of schools, a wide variety of impulses and interventions contributed to changes in work and leadership practices. The contribution of these other impulses and interventions to the work practices and leadership practices in the schools could only be covered in a limited way because they were not systematically explored during the interviews.

Because our research questions focused on boundary crossing activities between the university and the schools during the Master’s program, data gathering took place during the end phase of the Master’s program. As a consequence, this study could provide no information on the sustainability of the leadership roles of the senior teachers and their long-term impact. However, although school management emphasized that the senior teachers would be expected to assume their role only after graduating from the Master’s program, the data showed that during the two-year program, the senior teachers...
developed new roles and new attitudes toward their work, already leading in most cases to clearly defined outcomes at both the work practice and leadership practice levels.

As a result, notwithstanding the limitations of the data gathering process, the study provided insights into how a Master’s program focusing on teacher leadership could both contribute to individual leadership development and support school development by strengthening boundary crossing between school and university.

4.2 The impact of the Master’s program
The focus of this study is on the impact of a Master’s program on individual professional development as well as school development. Many studies have shown that learning arrangements focusing on individual professional development have a weak relation to actual improvements at the work place. Hackman and Oldham (1980) indicate in their Job Characteristics Model that changes in workplace performance are related to core job characteristics. Mayrowetz et al. (2007) used this finding to develop a model to understand the impact of distributed leadership in schools. In this model, they understood distributed leadership as work redesign, relating the redesigned work, the outcomes in terms of leadership performance and school development. The model ‘contains our best understanding of how and why efforts to develop distributed leadership in schools would operate and serves as a starting point for predicting the success (or failure) of these reforms’ (Mayrowetz et al., 2007, p. 75). As the aim of the Master’s program was to develop distributed leadership in schools, we used this model in an adapted form to understand the impact of the program on individual professional development and school development.

From our findings, we can conclude that the Master’s program has a large impact on both levels. On an individual professional level, the program initiated a change in expertise, attitude, authority, self-awareness and sense of self-efficacy. Senior teachers participating in the Master’s program indicated that they have developed new perspectives on their role and position and new qualities that can be used in their daily work routines. Although the formal tasks and job characteristics of the senior teachers had not yet been substantially redesigned, they used their new perspectives and new qualities to perform their regular tasks with a different focus. In their tasks, they used a deeper understanding of teaching and learning, a stronger sense of organizational processes, a stronger focus on colleagues and a different, more inquiring attitude. Colleagues, supervisors and the strategic management of their schools recognized these qualities and granted the senior teachers greater authority within the school. Through their leadership, the senior teachers initiated changes in the content and methods of the curriculum; used research to elaborate on challenges such as early school leaving, student mentoring, workplace guidance and student assessment; and initiated interventions for improvement in those areas. These
teachers supported their colleagues, tried to strengthen the self-awareness of teams, stimulated a more analytical approach in schools and acted as counterparts and sparring partners for the heads of departments.

Our study suggests an adaptation to the model of Mayrowetz et al., as the redesigned work was not so much a condition for leadership performance as it was a result of leadership performance. This adaptation recognizes the ability of teachers who develop their leadership skills to actively redesign and reinterpret their work themselves. Within the focus group sessions and the meetings of the monitoring group, the general understanding was that the Master’s program served as a catalyst, stimulating innovation and reflection on existing practices. In this way, various developments within teams and departments were initiated, challenging existing work practices and creating new leadership practices with a focus on team learning and self-steering teams. Through their leadership, the senior teachers were able to contribute to a change in organizational structures and cultures, which had appeared to be hindering teacher leadership. These teachers were able to cross internal boundaries, to strengthen the voice of teachers in defining the strategic aims of the school, to contribute to a culture of trust and to clarify the potential role for teacher leadership.

4.3 The impact of boundary crossing

In the interviews, we tried to identify the extent to which the design of the Master’s program strengthened its impact by creating several opportunities for boundary crossing. One of the key elements in the design of the Master’s program was to create boundary crossing activities during the design process of the Master’s program, stimulating strategic alignment and shared ownership. The ambition of the three participating schools was to combine the opportunity to appoint senior teachers with a Master’s program, connecting professional development with school development and connecting teacher leadership with innovation (Frost, 2012). The resulting strategic alignment between the strategic agenda of the schools and the aims of the Master’s program was reflected in the similar expectations that were expressed by the senior teachers, supervisors, management and university teachers with respect to the roles of the senior teachers. In addition to the activities within the Master’s program, the HRD staff of the schools organized activities to position the senior teachers within their schools, thus strengthening the impact of the Master’s program. In all three schools, the change of roles fit within a wider strategy and intention to promote self-steering teams of teachers and to deliberately involve teachers in the redesign of curricula and teaching.

This strategic alignment was reinforced by the shared ownership that was created through the involvement of the HRD stakeholders in the design of the program and in the regular meetings of the monitoring group with representatives of the senior teachers, the management of the schools and the university staff. This shared ownership built a platform from which to discuss issues and to suggest adaptations to the program. However, this ownership did
not extend to all of the senior teachers’ supervisors. Most of the supervisors felt that they had no role in the design of the Master’s program for their senior teachers. As a result, there was a limited sense of external curriculum consistency (Kessels, 1993). This gap between the strategic management of the schools that initiated the Master’s program, and the supervisors collaborating with the senior teachers within their department, indicate that boundary crossing activities need to address not only the boundaries between university and school but also the boundaries within schools like those between strategic management and the department level.

The **collectiveness of the design**, involving 42 senior teachers from three colleges for vocational education as boundary crossers, and the connection of the senior teacher position to the organizational structure of the school contributed strongly to a shared awareness of the role of the senior teachers at all levels. The group of senior teachers developed strong collective self-awareness of their role and contribution to the school. At the same time, the strategic management, administrative units, heads of departments and teachers could not ignore the existence of a new group of teacher leaders within the schools.

### 4.4 Effective boundary objects

The Master’s program was designed such that it could act as a boundary zone, facilitating boundary activities within the context of the Master’s program. To facilitate expansive learning within that boundary zone, boundary objects play an important role. Several boundary objects can be identified. The **monitoring groups** acted as a boundary object, creating a space where stakeholders from the two activity systems met and developed a shared understanding of critical elements in the design of the program. This group discussed opportunities for increased impact and stronger involvement of supervisors, which were translated into suggestions for improving the program and strengthening its integration in the school.

Another boundary object was the **research project** that all students had to complete as part of the Master’s program. Most senior teachers experienced the research as a powerful boundary object, as it provided tools for reflection, analysis and new perspectives on issues within their daily practice. Within the research project, the two activity systems of the university and the school confront each other. The tension that this confrontation creates can be a powerful source for expansive learning (Engeström, 2001). However, when this tension becomes too great, it can frustrate learning. Two senior teachers experienced this type of imbalance; they felt that the focus on formal Master’s-level criteria and formats conflicted with their practice-oriented learning style and thus impeded their learning. Moreover, some supervisors had no clear idea regarding how research could fruitfully contribute to school development after completing the Master’s program. They acknowledged the need for an inquiring attitude but saw very few opportunities for senior teachers to engage in research activities in their future work.
One aim of the Master’s program design was to involve supervisors and university teachers in the process of boundary crossing. However, the actual involvement of supervisors in boundary crossing was limited, and the involvement of university teachers was non-existent. Nevertheless, in the interviews, both participants and supervisors saw the potential value of this involvement. However, attending guest lectures did not appear to be an effective boundary object for supervisors; it was experienced as non-committal and without additional value. The guest lectures did not aim for a mutual and collaborative learning process among senior teachers, supervisors and other colleagues. Regarding the boundary crossing by university teachers, a concrete boundary object was missing, leading to hesitation on the part of university teachers to join activities in the schools.

Boundary objects can act as an interface for shared discourse through which differences between contexts are explored, knowledge is transformed and collective learning can be achieved (Carlile, 2004). In the monitoring group and the research projects, this type of discourse was established, creating an effective boundary object that provided ‘a shared syntax which allows exploration of semantic differences’ (Macpherson, Jones, & Oakes, 2006, p. 7) between school and university. However, for the supervisors and university teachers, boundary objects that created such a shared discourse were missing. During the interviews, several suggestions were made to create a ‘third space’ (Stein & Coburn, 2005) in which participants, supervisors and university teachers could meet to work on challenging and tough problems from the schools. Such third spaces could develop into effective boundary objects that engage supervisors and university teachers in a shared discourse.

5. Conclusion

In this study, we examined the development and impact of teacher leadership within schools and how this process could be supported by a Master’s program and by boundary crossing activities between schools and universities. The study shows that boundary crossing activities can help to bridge the gap between university and school that exists in many traditional academic Master’s programs. The design contributed to clear outcomes in terms of school development. In the case study reported in Chapter 4 which focused on a Master’s program with similar aims, the impact on school development was much smaller. Relevant boundary crossing elements were missing in that program, resulting in frustration on the part of the participants.

By using the concept of boundary crossing (Akkerman & Bakker, 2011; Star, 1989) together with the concept of external curriculum consistency (Kessels, 1993), six design elements were identified that could transform the Master’s program into a boundary zone connecting university and school (see Figure 5.1). Of these six design elements, three elements appeared to be decisive with respect to the increased impact of the program:
1. Strategic alignment: The alignment between the program aims and the ambitions of the schools to improve their teaching in response to societal expectations was considered to be an important element for strengthening the impact of the program. The appointment of senior teachers and their engagement in the Master’s program fitted neatly within a wider change agenda and with the ambitions to strengthen the teachers’ voice and role in curriculum development. The focus on teacher leadership was supported by an organizational structure with mandated senior teachers and by a focus on self-steering teams.

2. Ownership: A shared understanding of school management and the university teams with respect to the aims and intended impact of the Master’s program and the role of the senior teachers was created not only during the design process but also during the program itself through shared involvement in monitoring progress.

3. Collectivity: the engagement of a larger group of participants from one school created, on the one hand, a critical mass in schools that cannot be ignored and, on the other hand, a context for mutual support and exchange among teacher leaders in schools.

The study also contributed to our understanding of boundaries and boundary crossing between schools and universities; we identified two factors that limited the impact of boundary crossing:

1. Multiple boundaries: The study showed that not only the boundary between school and university but also the boundaries within schools, i.e., between teachers, teacher leaders, management and administrative staff, need to be taken into account. For example, our study showed that the shared ownership developed between the university teachers and strategic management did not extend to the supervisors, indicating that internal boundaries exist between strategic management and supervisors. When these boundaries are not included in the process of boundary crossing, and when supervisors or other administrative staff do not have the opportunity to develop ownership, the introduction of teacher leadership may have little impact at the school level. Instead of expansive learning, a ‘legitimate coexistence’ between the new teacher leaders and hierarchic leaders may result (Akkerman & Bakker, 2011).

2. The quality of boundary objects: The study showed that it was not sufficient to involve supervisors in guest lectures. If the ambition is to engage supervisors from the school or teachers from the university in the process of boundary crossing, it is necessary to define boundary objects that can act as an interface through which shared discourse can take place (Carlile, 2004), e.g., by creating third spaces where participants, university teachers and supervisors can work together, each contributing their specific expertise to solve tough problems in schools.

Our study also leads to reflections on the concept of teacher leadership. Within the schools that participated in this study, leadership was formally
allocated. This type of leadership is connected to a specific position within the organizational structure based on a formal selection process, available positions and a higher salary. In this context, school management offers teacher leadership positions based on a formal mandate. In this way, teacher leadership is integrated formally and strategically into the structure of the school organization. This structure is different from a context in which teacher leadership is distributed and embedded in the culture of the school and in which every teacher is given the opportunity to assume leadership based on the expertise needed in a specific situation. These types of teacher leadership can be considered to be two discrete and fundamentally different forms of teacher leadership and two manifestations in a developmental process (MacBeath, 2009).

The formally mandated leadership of the senior teachers – defined by management and accompanied by a higher salary – appeared to fit within the existing hierarchical structures of the schools. Within the context of the three vocational colleges, this structure appears to strengthen the leadership positions of the senior teachers: the formal structures prevented the group of senior teachers from being ignored because high expectations were created by management, supervisors, colleagues and the senior teachers themselves. The senior teachers were expected to demonstrate their fitness for the challenge and to prove their added value to the school. However, through these expectations, added value appears to be defined by the strategic goals of the organization and top management and translated into assignments given by the management and supervisors to the senior teachers; these assignments aim to benefit the whole school and not just one team or a specific curriculum. In its extreme form, this structure might imply that senior teachers are mere strategic tools used by the school board to reach their aims. This approach hints at a reactive role for senior teachers and might indicate that the senior teachers are considered to be mere instruments for realizing the strategic aims of the school or department as a whole and to be extensions to management. This viewpoint appears to contrast with the concept of self-steering teams that define their own issues and priorities from the bottom up based on local concerns instead of central strategic aims. However, in the context of the three schools in this study, formally and strategically distributed leadership appears not to be just a distinct manifestation of teacher leadership but also a phase in the developmental process, as indicated by MacBeath et al. (2009). In fact, several senior teachers used their leadership role to reinforce the self-awareness, autonomy and ownership of their teams and thereby changed the leadership practice toward more culturally embedded manifestations of teacher leadership.

In our study, the main focus was on the influence of boundary crossing on the school. However, boundary crossing implies a reciprocal process because expansive learning impacts both activity systems. Because the data collection primarily focused on stakeholders in the school, we cannot draw conclusions regarding the impact of the boundary crossing activities on the university. The
strategic alignment and collaboration between university teachers and the strategic management of the schools in designing and monitoring the program indicate that there is an awareness within the university of the importance of adapting Master's programs according to the needs of schools. However, the university teachers were reluctant to extend their role and to engage in activities within the schools. They understood their main task as supporting the senior teachers in such a way that the senior teachers would be able to engage supervisors and colleagues and to manage interventions independently within their local context. As a result, the university teachers had sparse information about the local context of the senior teachers and their performance in terms of leadership, implementation and inspiration. This lack of information suggests that the primary focus of the university teachers remained on the academic value of the program for the individual participants. The practical impact on the school was a secondary concern, leaving the impact of the boundary crossing on the university relatively unexamined.

In a situation where mutual benefits of boundary crossing are expected, developing effective boundary objects that engage university teachers more intensively in boundary crossing activities and that stimulate expansive learning at the university level should be a topic for further research.