They will get there! Studies on educational performance of immigrant youth in the Netherlands

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5 A tailor made transfer of scientific knowledge to school practice*

But despite the fact that natural knowledge is divine, its practitioners cannot be called prophets. For other men may discern and embrace what they teach with as much certainty and entitlement as they do themselves. They do not just accept it on faith.

Baruch de Spinoza, 1670

5.1 Introduction

The importance of scientific research for school practice is generally acknowledged by teachers and school leaders, educational researchers, and policy makers. Educational policies at the government level, furthermore, seem increasingly supported by academic research (e.g. the No Child Left Behind Act, U.S. Congress, 2001). So far, however, the effects of research findings on school outcomes seem disappointing (Slavin, 2002). The academic literature in the domain of the utilization of knowledge in the practice of schools reports very limited transfer of knowledge to schools.

Ideally, the process to connect school questions with existing research outcomes should include 1) the articulation of school questions; 2) the search for a match with research findings; 3) a knowledge based intervention in school processes; and 4) the analyses of the effects on school outcomes.

The aim of this paper was to investigate what obstacles hinder the process of knowledge transfer, and how the application of scientific knowledge in schools could be enhanced. So far the limited use of scientific knowledge in schools appears to be a stubborn problem. We therefore chose to carry out a detailed study in six secondary schools.

We carried out in-depth semi-structured interviews with Principals to identify and articulate school questions. Next, we carried out a literature review in order to link these questions to state-of-the-art research publications. Together with the six school leaders, we concluded this explorative study with an evaluation, again by means of a structured personal interview, of the applicability in school practice of a tailor-made selection of research publications.

In 2011 two reports were published in the Netherlands on the importance of an enhanced transfer of knowledge from educational research to an effective utilization in schools (Education Council of the Netherlands, 2011; Commissie Nationaal Plan Toekomst Onderwijswetenschappen [Committee for the National Plan for the Educational Sciences], 2011). Inspired by these reports, the present study sets out to investigate what the nature of school questions is, and whether these questions can be linked to relevant, high-quality, existing research.

We carried out our research in secondary schools with a diverse student body, including at least 30% of pupils with a migrant background. We focused on themes related to the quality of school outcomes and equal opportunities for all pupils. We made this choice for diverse schools because the attempt to understand the stubborn and persistent achievement gap between migrant pupils and native-born youths, and, more in general, between low SES (socio-economic background) children and more affluent youth, is an ambitious policy goal both in Europe and in the U.S. A wealth of research outcomes is published yearly on the achievement gap in education, and it may be assumed that researchers in the field of education implicitly expect that schools could
benefit from the results of their work, when these results actually would be translated to school strategies.

Previous research is described in Section 5.2. We describe our methodology in Section 5.3; the six schools are portrayed in Section 5.4; the findings are listed in Section 5.5 and the conclusions in Section 5.6. The findings support our assumption that schools need to be understood in their specific context, and that a timely match between question and answer seems a prerequisite. The outcomes show that school leaders do indeed have a demand for a knowledge base for their strategic themes; the majority of queries could effectively be linked to research publications. In five out of six schools, the selected scientific insights have been used to guide new school strategies, support existing programmes, or inform discussions with the school board and local (political) governors. Based on this project, school leaders recommend the formation of an intermediate function between academe and secondary schools.

5.2 Previous research

Different kinds of knowledge

According to McIntyre (2006), educational research and school practice are "two sharply contrasting kinds of knowledge...that are at the opposite ends of the spectrum": researchers abstract ideas from complex realities, while teachers simultaneously work in many dimensions: the concrete setting of their class, but also the combined levels of school, parents, local stakeholders, the curriculum, and the many unpredictable daily events in a large school. McIntyre (ibid.) suggests that the transfer of knowledge vice versa between these two different worlds might benefit from the work of researchers who generate general research-based suggestions for practice in their publications, discuss possible implications of their research with teachers, and cooperate in monitoring the effects on outcomes of knowledge-based interventions.

Landry, Amara and Lamari (2001), instead of comparing the different categories of knowledge in academe and in schools, focus on the question whether academe raises barriers, through its culture and organization, and notably in terms of additional transition costs, against the dissemination of the results of scientific research to classroom practice. To start with, the authors acknowledge that dissemination efforts at best play a minor role in the evaluation of the quality of research; this expectedly does
not stimulate the transfer of research to classrooms. Based on their research, Landry et al. (ibid.) describe a list of predictions on how the transmission of knowledge might be improved. Several of these predictions seem especially relevant for the present research: 1) educational research projects should be customized to applicability in practice, and correspond with the needs of teachers; 2) explanatory variables should reflect the user's context, thereby adding to the credibility of research; 3) the utilization of research possibly may increase when results are pertinent and reach schools at the right time, coinciding with current school questions; 4) more easily readable reports with specific recommendations for practice could improve the applicability of research, and, perhaps even more important, "factors such as...efforts to focus on variables amenable to intervention by users", could be expected to bridge the worlds of academe and practice. Interestingly, Landry et al. (ibid.) introduce the concept of a new feature: the linkage mechanism (i.e. the translation of research outcomes to practice as a distinct expertise). With reference to the power of context an important finding of Landry et al. (ibid.) should be mentioned here: taking into account the user's context, turned out to be a far stronger variable than the user's needs. The recommendation by Landry et al. (ibid.) to invest in the further development of skills that are required to identify school themes, and to explain the applicability of research findings, have inspired the methodology we describe in the current study.

In the Netherlands, a successful linkage mechanism, albeit in the field of agriculture, started as early as 1876, when the predecessor of Wageningen University and Research Centre was founded. Almost from its beginning, in 1877 the first regionally based testing stations were set up, that brought workers in agriculture and cattle breeding in contact with scientific researchers. Largely supported by the opportunities of the Internet, to this day Wageningen is firmly associated with institutions and individual workers in the domains of food production, the environment, and health. Their website offers up to date reports and research outcomes considering current themes in the field (for example http://www.livestockresearch.wur.nl), and, through a web-based information centre, workers in the field can submit research questions emerging from practice, when no financial means for initiating research are available to them. Admittedly, it is a complicating factor that educational research is carried out in different scientific disciplines, not organized in one specific university, as is the case in
Wageningen. We feel, however, that the example of Wageningen University might offer a valuable example for education, as will be elaborated at the end of this paper.

Furlong (2004) adds to the goal of a more effective validation of knowledge, the noteworthy caution not to get involved again in "epistemological divisions and paradigm wars", referring to the constant emphasis in political and policy debates on proven "what works" research, and the strong priority for controlled randomized trials in research design. In Furlong's view, researchers should consider the work of Schön (1983) on the "reflective practitioner", and invest in connecting researchers with professionals in schools while acknowledging the teacher's own subject knowledge and judgment. The critical assessment of academic work, furthermore, is regarded to be a necessary specific skill that should be embedded in on-the-job training of teachers in order to equip them better for research utilization. Furlong (ibid.) also advocates that researchers and practitioners should work together directly, in order to make research work in schools.

**Reciprocal views of educational practitioners and academic researchers**

Vanderlinde and Braak (2009) investigated in Flanders the opinions that teachers, school leaders, researchers and intermediaries hold of one another's roles, with regard to the gap between research and practice. The outcomes of their focus group interviews indicate that particularly teachers are sceptical about the value of research for their classroom practice, since they feel that research does not offer enough practical applicability. School leaders, however, report that they do, in fact, try to use research findings, notably for themes concerning the school organization. Researchers expressed that their first and foremost concern was the assessment of their work by the academic community, and that they lack the time and incentive to make their work readable to a wider public, although they recognize that the use of technical language may form a hindrance for practitioners. Not surprisingly, intermediaries did not experience the distance between research and practice to be a problem, but rather a challenge. Arguably, however, the opinion of the researchers in the focus group, to delegate the transmission of knowledge to intermediaries, could be interpreted either as an innovative idea or as yet a further seclusion of scholars in academe.
Intermediate actors

Nutley, Walter and Davies (2002) take the epistemological discussion on the preferred design of educational research further, in distinguishing the instrumental from conceptual use of research. By their nature, results from controlled randomized trials might more often be instrumental, since preferably specific discrete practices are compared in these experiments. Bringing into mind, however, the complex and highly contextualized characteristics of schools, also conceptual insights from research (for example the role and function of the school amidst societal themes concerning equal opportunities) might be appropriate and helpful. Nutley et al. (ibid.) refer specifically to the significance of a dissemination medium for linking research to schools. They emphasize, furthermore, the importance of the timeliness and accessibility of research findings, and – not surprisingly– the flexibility, reliability and credibility of research.

Research to support school reform and evaluation

While the current paper wants to elucidate how the transfer of knowledge between research and individual schools could be improved, the research base for government policies, however, should also be mentioned here. The assumption is, that the knowledge underlying government policies should preferably be accessible to schools, in order to enhance the acceptance and implementation of general policies. Slavin (2002), when reflecting on the enormously increased technical potential of data analyses, speaks of a "scientific revolution that has the potential to profoundly transform policy, practice and research". Yet, he records the fact that large-scale reform programmes in the U.S., for example the No Child Left Behind Act (U.S. Congress, 2001)—albeit such programmes may need a longer period of time to demonstrate outcomes– have so far failed to demonstrate significantly improved educational outcomes at the system level. In the Netherlands, heads of school and teachers express doubts on the knowledge base of government reform programmes, and doubt sometimes whether the feasibility of translating reform programmes to school practice per se, has been the subject of research at all. The Education Council of the Netherlands (2011), furthermore, states that the tendency seems to be that large-scale educational reforms have not so demonstrated the expected results. In his inaugural lecture of 2001, Hessel Oosterbeek already expressed his concern that teachers' motivation might erode, when they have to
comply with new government policies and then never learn about the effects of such policies. Slavin (ibid.) critically notices that too often government programmes are not based on evidence of actual effectiveness in practice. Slavin (ibid.), furthermore, remarks critically that research can be found to support virtually any point of view given a specific theme in a school; contradictory research outcomes considering the same theme, may severely hamper the use of academic knowledge.

Even apart from doubts on an adequate research base for national school reforms, Morell and Noguera (2011) criticize government policies for neglecting the fact that some schools, for example, those with many low SES or migrant pupils, demonstrate excellent outcomes, while others do not. National policies tend, however, to address all such schools equally as disadvantaged. Worldwide, schools struggle with context specific obstacles, when trying to implement national reform programmes. Morell and Noguera (ibid.) convincingly explain how long term meaningful partnerships between research and practice, leading to joint research agenda setting, research based interventions in school practice and subsequent monitoring of new strategies, might enhance the effectiveness of school reform. Research insights may be applied in different ways in schools. Johnson (1998) distinguishes between instrumental (basis for action), conceptual (offering insights), process (learning about current processes), and symbolic (e.g. in political discussions) use of evaluations.

Finally, the Education Council of the Netherlands (2011) recommends three main strategies for a more effective transmission of research to practice:

1. The formation of networks consisting of schools, universities, and centres for education, by analogy with medical schools in academe. In addition, at each school several teachers should develop competences for analysing their results in a more scientific way, in order to be able to study the effect of interventions.

2. The foundation of a new agency, consisting of representatives from schools, academe and the government, which coordinates agenda-setting for fundamental, practice-based, and policy-oriented educational research.

3. Considering the ambition that all schools, in the future, should invest more systematically in quality improvement, the Council proposes that the Ministry of Education should allow schools sufficient free rein, in order to develop methods that fit the individual school best. The government, furthermore, should ensure
that school reforms are introduced in a way that can be monitored effectively, notably by the schools themselves.

Inspired by the academic work described in this Section, we have set out to investigate in the current study, what obstacles hamper the use of existing academic knowledge in school practice and how this process could be organized more effectively. Based on the reviewed literature and our own experiences, we had two assumptions. First, we assumed that schools are to a considerable extent influenced by their specific context, and that this context should strictly be taken into account in order to make an accurate match with relevant research publications; second, we assumed that research could work in schools when there is a timely match with existing school questions (e.g. Landry et al., 2001; Morell and Noguera, 2011). The method we designed and tested was based on these two presuppositions. Through in-depth interviews we collected main school questions, and carried out a literature review for every question in search for state-of-the-art publications to match these school themes. Furthermore, we analysed the nature of school questions and the different categories of academic knowledge that supported best school practice. In this way, we set out to achieve a deeper understanding of concrete intermediary practices that actually link in-depth explored school questions with adequate research outcomes. Finally, we took into account that our method should allow scaling up to larger numbers of schools, within reasonable costs.

5.3 Methodology

We based our methodology on the following research questions:

1. Do school leaders have significant questions that demand for academic research outcomes as a guidance?
2. Can school questions be linked to manageable, high quality outcomes of existing research?
3. What is the nature of school questions, and what categories of academic knowledge can best be matched with these queries?
4. Can selected research findings subsequently be applied in school practice and strategies?
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5. Can specific impediments for the transfer of applicable knowledge to schools be identified?
6. What are the requirements for an intermediate practice that could bridge schools and academe satisfactory?

Below we will describe the interventions we carried out, and motivate our choice to focus on the role of the Principal in the transfer and use of knowledge. We will describe the method of semi-structured interviews we used, as well as our procedure for establishing the match between school questions and applicable research findings. Finally, we will describe the format of the evaluative interview.

5.3.1 Six participating school leaders

We choose to focus on six schools because we wanted: a) a detailed insight in the present use– or the lack thereof– of scientific knowledge in individual schools; while b) we wanted to be able to compare schools and find possible patterns; and c) to have a sufficiently large scale in terms of the number of pupils served by these schools. We carried out our study in a real-life context, which was another important reason why we chose this design (Yin, 2009). In an attempt to make participating schools not too diverse in too many dimensions, we invited only schools in Amsterdam\(^{31}\) to participate (see Appendix 5-1 for a general description of the participating schools).

All six schools offer the two highest tracks in the Dutch system for secondary education, referred to as "academic tracks" in this chapter, since completion grants access to higher education.\(^{32}\) Five schools also offer pre-vocational tracks that qualify for senior vocational education. We labelled schools A-F in random order.

\(^{31}\) Calandlyceum, Comenius Lyceum, Hervormd Lyceum West, Open Scholengemeenschap Bijlmer, Spinozalyceum, IJburg College.


- VMBO: pre-vocational secondary education, 4 years, ISCED 2, qualifying for senior secondary vocational education
- HAVO: senior general education, 5 years, grade 1-3 ISCED 2, grade 4-5 ISCED 3, qualifying for higher education
- VWO: pre-university education, 6 years, grade 1-3 ISCED 2, grade 4-6 ISCED 3, qualifying for higher education
- MBO: senior secondary vocational education, level 1 ISCED 2, level 2-4 ISCED 3, level 4 qualifying for higher education
- HBO: universities for applied sciences, ISCED 5B
In the case of four schools (A, B, D, F), the vast majority of students have a migrant background; most of these students were themselves born in the Netherlands, but have at least one parent born abroad. Three of these four schools (A, D, F) mainly enrol students with a Turkish or Moroccan background. One school (B) enrolls mostly students from Suriname, the Antilles, and Ghana. School E attracts many students from a well-educated population in a recently built neighbourhood, as well as students with a migrant background with parents who had fewer chances to receive good schooling. School C has a currently changing composition of students and enrols a growing share of children with middle class parents, while the share of migrant students is decreasing. The ambition of school C remains, however, to attract students who mirror the diverse multi-ethnic population of Amsterdam.

The total number of pupils enrolled in the selected schools (school year 2011-2012) is 6335. 1765 pupils are enrolled in the largest school, 353 in the smallest one. The two smaller schools in our study are growing substantially in student numbers.

In some important aspects the six schools may be characterized as schools that invest largely in "Systemic Equity" (Scott, 2001; Brown, Benkovitz, Muttillo and Urban, 2011): they have implemented coherent policies to establish equal opportunities for all students, notably those with a non-academic family background; they welcome diversity and are investing in further specific professional development of teachers. All six participating Principals were committed to the function and place of their school in the context of societal themes, notably the full and meaningful participation of migrant pupils in society, and their position on the future labour market.

We offered no cross-information between participating schools; it may be assumed, however, that the Principals themselves have frequent collegial contacts.

We chose to base our study on structured interviews with school leaders because, according, for example, to the report on leadership and student learning, funded by the Wallace Foundation (Louis, Wahlstrom, Michlin, Gordon, Thomas, Leithwood, Anderson, Mascall, Strauss and Moore, 2010) "...Leadership explains five to seven % of the variation in student learning across schools (not to be confused with the

• WO: research universities, ISCED 5A
The completion of ISCED level 3 is the internationally agreed initial (or basic) qualification for the labour market. School leavers without an ISCED 3 qualification are regarded as early school leavers or drop outs.
very large within-school effects that are likely). Five to seven %, however, is about one quarter of the total across-school variation explained by all school-level variables, after controlling for student intake or background" (Classroom factors explain more than a third of the variation). The authors add, however, that it is as yet unclear what characteristics and practices drive this school leader's effect on outcomes. With the current study we hope to contribute more insight into the questions, ambitions and practices of the six involved Principals.

Another reason to choose Principals as our source of information is their intermediate role in discussing the function of a school in the context of societal themes, with external parties, other schools and local and national politicians (Sanders, 2009). Importantly, the six school leaders played an important role in the design of the present study, where they acted as co-creators.

5.3.2 Five separate phases of investigation

Phase 1: Semi-structured in-depth interviews (Research question 1)

The current research started with a 1.5 hour semi-structured in-depth interview with the Principal. Each interviewee was informed about the overall purpose of the current research; the participants were also informed about the method and time schedule of the project. The interviews were (with permission) recorded.

The interview consisted of three parts (see Appendix 5-2 for the complete list of questions);

1. Part 1: A reflection on the school's context, in a way that was meaningful and relevant in the view of the Principal.
2. Part 2: A description of the influence on specific current policies and teaching practices of distinctive context characteristics, or characteristics of the student population.
3. Part 3: When reflecting on parts 1 and 2 of the interview, what are important remaining questions considering further ambitions and developments that are as yet difficult to answer? What kind of scientific knowledge (practical, organizational, conceptual) would support the Principal in further ambitions and the development of school quality, and what are the problems, so far, with obtaining this type of academic knowledge?
A report of the interview, based on the recorded discussion, was returned to the Principal, in order to verify that the text correctly covered the discussion.

**Phase 2: The nature of school questions and the search for a match with scientific literature (Research question 2 and 3).**

In every interview, between three and five main, complex questions were identified, in total 21 questions for the six schools together. In this list different types of school questions could be distinguished (e.g. conceptual and organizational themes, long term policy effects, content of the curriculum, the balance between cognitive and non-cognitive skills and effective policies for teacher quality) that required correspondingly different types of applicable academic research outcomes. The literature search, in general, followed the order of trying to find, in the first place, causal evidence, based on randomized trials or quasi-experiments. Secondly, (meta-) review studies, carried out by top ranked researchers and institutes, were selected. Thirdly, when school leaders had questions about good practice in other schools, case studies carried out by highly ranked researchers were selected. International comparative studies were selected to match questions on practices in other countries. School leaders were informed about the nature of every academic research article we sent, following the above order. Considering the quality of selected publications, the following list of criteria has been used:

- All selected articles had to be published in reviewed journals; books had to be written or edited by academic authors who published highly ranked articles.
- When case studies were used, studies in reviewed journals were selected, or case studies published on programme websites of top ranking universities or institutes.
- Research outcomes should have clear prospects for translation to school practices and ambitions.
- In the case of research publications based on educational systems in other countries (this was the case for most of the articles that were selected), the relevance for the Dutch situation should be obvious (and was explicitly explained).
- No publications before 1999 were used.
Phase 3: Feedback in the format of a letter

In order to prevent that the Principals from having to read yet another report—a recurrent complaint expressed during the interviews—the matching academic publications were sent in the format of a letter, specific for each school, of around five pages. In this letter the school’s questions were summarized and the method used for selecting publications (described above) was also explained. The links to all the articles were attached as well. The letter briefly motivated the choice of publications, and how and why, in our view, these connected in our view to the school’s questions. The school leader could choose to use the short descriptions in the letter, or study the whole of the attached research papers.

The Principals each received between four and ten references in total. For practically all school questions an extended list of high quality research papers was available in academic databases; the idea was, however, to send no more than one or two state-of-the-art references per question, with the offer that more references could be sent upon request. We restricted our answer to a maximum of ten references per letter.

Phase 4: Intermediate check in three of the six schools of the applicability of the research matches that had been sent (Research question 4)

The concise style of the letters raised questions by us on the accessibility of the texts concerned. In order to test this, with three Principals (A, B and E) an extra meeting was planned to reflect on the applicability of the recommended research in the letter.

The following interview format was followed:

- Did the Principal have the opportunity to read the letter and the attached scientific articles?
- Did the articles, in the Principal’s view, match his or her initial questions?
- Did the letter raise any further questions, and was extra information needed?

Phase 5: Evaluative interview (Research question 4, 5 and 6)

The evaluative interview took 1.5 hours and was clearly structured around six evaluating questions on the utilization and manageability of the offered sources of relevant knowledge. These questions concerned: 1) an impression of the whole trajectory of the current study; 2) the usefulness of the academic knowledge for
discussions with staff; 3) the nature of the use of the presented research outcomes: instrumental, conceptual, re-consideration of running processes, use in external debates (after Johnson, 1998); 4) the influence of the scientific insights on the interpretation of the school's context; 5) obstacles for the transfer of academic knowledge to practice; and 6) the options for scaling up the current method (for the full list of questions, see Appendix 5-3). The evaluating interview was planned three months after the school leaders had received the letter with research recommendations. The interviews were recorded with permission.

The final interview partly mirrored the initial interview: the initial interview started with the Principal's reflection on the school context and questions that followed from this specific context, the final interview ended with the question whether the recommended scientific insights had influenced the school leader's views on the school's environment.

5.4 Portraits of the participating schools and their main questions

Below we will describe the participating schools in the following order of discussion:

We start with a characterization of every school, and summarize the number and type of questions. All questions (numbered Q1, Q2, etc.) and the matches that came out of the subsequent literature review (numbered accordingly A1, A2, etc.) are listed in Appendix 5-4. Table 5-1 presents all question clustered in themes, plus the matched publications. Table 5-2 lists the categories of research publications that have been selected per thematic cluster of school questions.

Furthermore, we describe an intermediate discussion in the case of Schools A, B and E, shortly after the Principal had received the scientific matches with his or her queries.

Finally, we quote the Principal's evaluative remarks on the project and present an inventory of the use of the suggested research findings, as well as recommendations for the follow-up of this project. Table 5-3 presents the outcomes of the evaluative interview, and Table 5-4 the applications of the research outcomes in school practice.
5.4.1 School A: An enriched idea of the school’s added value for students with a migrant family history

School A serves a vast majority of pupils with a Turkish and Moroccan background; the school offers the two highest secondary tracks, and, therefore all pupils with a diploma qualify for higher education.

The Principal's most important question concerned the segregated character of the school, which was situated in most of the pupils' area of residence. After students have successfully passed their final exam they typically will enrol in higher education, and may be confronted with a different culture that may be partly unfamiliar to them. There might be even more challenges, the Principal expects, when his pupils, after having completed a university degree, enter the higher strata of the labour market. The Principal had two main questions: Is it an advantage for pupils to be enrolled in a school that is specialized in upward mobility, albeit segregated- or would pupils be better prepared for a full and meaningful participation in Dutch society, when they would attend a desegregated school? Could pupils, furthermore, benefit from more teachers who also have a migrant background?

School A raised three main questions, that could each be matched to several research publications. Two questions were of a conceptual, strategic nature, concerning segregation of schools; one question concerned policies for hiring teachers. 2 books were suggested, 1 study based on causal evidence, 1 international comparative study, 1 randomized experiment, 1 website.

The extra discussion, to explore the opportunities for the use of the selected research publications

School leader A was surprised that the research findings in important ways differed from what he had expected. His expectation had been that desegregated schools were always the better option, especially considering future chances on the labour market for his pupils. The Principal, furthermore, valued the presented research on the importance of developing multiple identities for migrant youth, and said that he felt encouraged to invest further in specialized teacher competences with regard to

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33 In the Netherlands all schools are funded equally by the government and low SES pupils, including many pupils with a migrant background, receive extra funding. Schools are independent of local tax revenues and parents do not pay tuition fee in elementary and secondary education.
migrant students. The research findings had been used in debates with local political leaders and other school leaders in the district.

**The evaluative interview**

The Principal stated that the project had deepened his thinking about the role and function of his school in a community largely consisting of people with a migrant background.

> Based on our discussions and the letter with relevant research publications, I started thinking somewhat differently about my school. I still think desegregated mixed schools are the preferred option, but I am more inclined to think now about my school as an accelerator for the full participation of migrant pupils in society. I especially appreciated the participation (NB of the researcher) in the debate with political governors of the Amsterdam district New West. Looking at segregation from different knowledge-based perspectives was helpful; it made me realize the values of my school, although it is a segregated school.

I valued the scientific answers to my questions and especially that research acknowledged that schools are deeply contextualized; even a school in the South East district of Amsterdam may differ in important aspects from my school in the New West district.34

The content of the letter had not been discussed with colleagues within the school; school leader A considers the complex aspects of equal opportunities for migrant children to be his main personal assignment. The literature we had suggested on improving opportunities for migrant pupils resulted, according to the Principal, in a more positive view on his school "I have a warmer appreciation of my own school, and have a higher esteem of our professionalism".

The offered scientific knowledge had influenced views on current school processes, and was used in strategic discussions with external stakeholders. The information was not used for direct instrumental actions.

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34 All interviews were in Dutch; citations have been faithfully translated literally in English.
The method developed in the current study, according to the Principal, could be expected to be of special significance for starting headmasters. The Principal made a salient final remark: the fact that the interviewer in the current study, unlike a coach or a consultant, did not charge any fee had strengthened his trust in the project.

5.4.2 School B: the advantage of a professional review of academic literature

School B is situated in a district of Amsterdam with relatively high unemployment, poverty, and single-parent families. Around 60% of the pupils have a Surinamese, Antillean, or Ghanese background. The school has a long history of extended comprehensive education (the Dutch system typically has early tracking), and is committed to this principle. The school, however, faces strong competition (notably regarding talented future students and their parents) from schools in the city centre that start with early tracking at age 12 at academic levels.

The Principal's main questions refer to the school's choice for extended comprehensive learning: is postponed tracking and stimulating upward mobility to a higher track, chiefly benefitting pupils with a non-academic family background, or is longer comprehensive learning benefitting all pupils? Related to the above, the Principal raised questions on the best balance between cognition on the one hand— and meta-cognitive skills (notably academic reasoning) and personal growth on the other, notably for low SES pupils. Like the five other participating Principals, Principal B emphasized also the importance of receiving data on the future success of the school's pupils in higher education.

School B raised three questions that could each be matched to research publications; the question on the future study success of pupils in higher education after leaving school could, however, only be answered in general, not for school B specifically. Two questions referred to both the school's role in the local community and subsequent choices in current school processes. One question concerned data on later study success in higher education of former students.

The extra intermediate discussion

Principal B strongly recognized the school's questions in the presented academic literature. She was particularly interested in research outcomes that prove that schools which offer a broader array of tracks (both professional and academic tracks) do indeed
increase chances for upward mobility (Van Elk et al., 2011). On the other hand, she recognizes also, however, that this still might not change the current trend that high potential students tend to choose a school in the city centre that exclusively offers academic tracks. The selected research publications also support the school's new programmes on higher order learning skills. The Principal expressed the view that the intermediate explorative discussion made her more aware of the opportunities for use of the research findings, and motivated her to discuss the letter with the school's project team on diversity in education.

**The evaluative interview**

The school leader pointed out that it is also relevant to learn which questions as yet cannot unequivocally be answered by research, for example the question: Does a broad school like hers, providing all tracks (professional and academic), potentially generate better results for all pupils, or might, in fact, early tracking for gifted students be more attractive, especially for pupils with more affluent parents? She added that the current research project came at the right time, since the school was deeply involved in discussions about continuing its mission of comprehensive learning, with special emphasis on non-cognitive skills, or instead making a change to partial earlier tracking.

*It is good to be able to use existing knowledge to plan your strategies. We think too often in education that we cannot select an appropriate research basis for our school innovations, since research on the same subject often seems to present contradictory outcomes. Because of this project we know now which research is relevant in our context, and why.*

Immediately upon arrival, the letter was sent through to the management team and the school's project group for diversity, which under the leadership of a recently appointed vice-Principal was reconsidering the school's mission of postponed tracking. The vice Principal expressed the view that "the presented research inspired our thinking and gave us a firm base to stand on".

The research findings had been used in different ways, direct and instrumental, for conceptual thinking, to assess current developments, and in external debates. The school leadership and the teachers cooperating in the project "diversity", felt more
reassured after studying the suggested research, to remain faithful— but with new energy and ambitions— to the school's long history of establishing a balance between cognitive learning and personal growth, in the context of a diverse community. It was, furthermore, seen as an advantage to have a source of information from outside the school.

The Principal expected that the methodology we developed could be interesting for cooperating groups of schools. Seminars and focused discussions on specific themes could largely benefit form a tailor-made selection of academic research. She also expected herself to have further questions on relevant research outcomes in the future.

5.4.3 School C: The important next step, translating research outcomes to teacher practices

The school's educational philosophy is based on a didactical model that stimulates pupils to gradually take more responsibility for their own learning process (known as the *Dalton* pedagogy, based on the work of Helen Parkhurst). Pupils can choose, for example, to partly make their own choices by taking extra classes in specific subjects. The school, moreover, offers ample opportunities for cultural and artistic development, notably in music. Traditionally, this type of school attracts more middle- and upper-class students, with typically well-educated parents. The Principal confronts the school's pedagogical principles with contrasting ideas of strict and ordered school policies, mainly aimed at cognitive learning, that are in public and political debate often regarded as being more effective for pupils with a non-academic background (which is the case for many migrant students).

The main questions concerned a further knowledge base for the school's didactical system, an effective organizational model for teachers working with this system, and research on the effects of grade repetition (a particular concern of the school leader). three questions were raised; one question could be matched with research that approached the school issue, but was not an exact match. The other two questions could be matched directly. 3 reviews were suggested (one of these an inaugural lecture), 1 report, 1 case study, 1 website.
The evaluative interview

The Principal emphasized that it was interesting to learn that the profound structured discussion on his own school themes could indeed be linked to research outcomes, although one question could not be matched precisely with the relevant literature.

It is important to realize that this research project also indicates which questions still need to be further investigated, because indeed we do not know the answer to, for example, the question whether my school’s philosophy on learning, results in better learning strategies and planning later on in higher education.

I felt the interview was an invitation to try to formulate relevant questions concerning my vision and ambitions, related to actual school practice.

It is important to follow up this research, including the actual implementation in school practice and policies.

The critical remark was made that the most important part of an adequate utilization of knowledge, in the view of Principal C, had yet to follow: the translation of research findings to actual classroom practice; this translation process, in his view, requires further guidance by case-study research on good practice. Therefore, the presented research had not yet been used directly.

The school leader felt that linking school questions to scientific knowledge could be an interesting starting point for inter-collegial seminars and discussions.

5.4.4 School D: Taking time to focus on the complex questions we encounter

School D has largely invested in special programmes, like bilingual education (Dutch and English), top sport tracks, and Technasium (technical and science education). The school is committed to maximizing opportunities for learning for all pupils, and no longer thinks along lines of ethnic or SES differences. In their view, they serve the surrounding community and try to relate to the specific learning requirements of all young people living in the nearest of the school. They are, furthermore, committed to postponed tracking, in order to grant pupils more time for exploring their talents and
capacities. The director’s question concerned postponed tracking, extra courses for e-learning and its consequences for the organizational model of the school. Considering the fact that most pupils in school D have a migrant family background, the director was concerned about the consequences of currently occurring societal prejudice. Finally, the director inquired after the most effective (evidence based) financial intervention, tailor-made for his school and its environment. Five questions were raised, one could be matched with more general research outcomes, and the other four could be matched directly.

The evaluative interview

The input for further conceptual thinking on the school’s role and function amidst complex societal themes was felt to be an important advantage of this research project. The letter with links to relevant research, moreover, turned out to be a valued source of information for discussions with the school leader’s successor.

In the first interview we discussed subjects that are constantly in the back of my mind; but it is hard to find the time to really organize my thinking. I appreciated this opportunity. The letter that followed up on the interview showed that high quality research supports— and in some cases even proves— our visions on the added value of a broad school like ours that offers all secondary tracks and extra programmes as well. It sounded like music in my ears that there is indeed evidence that pupils in professional tracks have more chances to eventually complete higher education when they start in a broad school.

I feel supported by this project in our choice to be fully aware of our ethical, moral and societal responsibility— as opposed to marketing and competition driven strategies.

In external political debates we feel strengthened in our position.

According to the Principal, especially large complex themes require focused meetings and time to work out all consequences, time that is always too scarce in the everyday complexity of school life. It was mentioned specifically that a knowledge-base
for standing practice may be as important as scientific insights for guiding future projects.

   The current method was considered to be worthwhile for cooperating schools, clustered, for example, around serving a diverse student body.

5.4.5 School E: The pleasure of taking time for reflection

School E is a recently-founded new school, offering ample opportunities for choices on school organization and didactical principles, as well as the hiring of new staff. The Principal is dedicated to making evidence-based decisions together with the teachers, and emphasizes the school's ambitions in designing innovative learning for the 21st century. The four raised questions referred to these themes. All questions could be matched with relevant research outcomes. 3 publications with causal evidence were used, 4 (meta-) reviews, 1 case study, 1 report and 1 book.

The extra discussion

Principal E has a background in educational sciences, and is committed to making knowledge driven decisions for all strategic school themes. He has indeed studied the research findings in the letter extensively, and feels further supported in his innovative ambitions and practice. The Principal emphasized that the academic knowledge provided had inspired him to look at current school developments from new angles, notably considering the balance between skills and cognition.

The evaluative interview

According to the Principal, reflecting on the overall design of school innovation, to consider limits and opportunities and to reflect on the concepts underlying one's thoughts, requires time and concentration. Therefore, one of the main advantages of the current project was, in the view of the director, the in-depth discussion on such concepts.

This was a "gift", to just talk to someone in a certain thoughtful way about important issues; you do not find the time in the bustle of everyday work to reflect on such themes; to sit back and think about the larger design in your way of working, your interventions and your concepts, all the things that relate to this, what are your impediments, what
information do you need specifically. You do not easily find the time for this, at least not in my practice as a school leader. That requires someone who asks questions in a specific way, who from a comparable background in educational leadership, and for a specific purpose, continues to ask further questions about the things that are of concern to you. I really enjoyed that. The knowledge sources that were offered, you do not find easily as a Principal. I will certainly do more with this, notably considering the process of translating requirements for skills for the 21st century to school practice and policies.

The Principal, furthermore, felt supported in his vision that innovative learning for the 21st century requires specific skills and further training of teachers. He had shared the letter with his team and among members of his external network of innovative schools. The information was used for conceptual thinking, and several internal and external meetings. While studying the literature on the subject of innovative learning he had realized once more, how conservative, in his view, education tends to be. And yet, society is changing at an unprecedented tempo, if not only because of the phenomenal new digital prospects.

The school leader's recommendation was to use our method to support schools that focus on the, in his view, under-studied theme of urban education in the Netherlands.

5.4.6 School F: Time is the most scarce ingredient

School F serves a student population consisting of more than 90% pupils with a migrant background, among them many youngsters who are the first in their family to enrol in secondary tracks that qualify for access to higher education. The school structurally invests in continuous formative assessment of pupils, with the aim of enhancing opportunities for upward mobility to higher secondary tracks. The main questions concern extra programmes (on top of the standard curriculum) for migrant students, further teacher training, and leadership. Three questions were discussed, that could all be matched to research publications. 3 matches with publications on causal evidence were made, 2 reviews, and 1 report.
The evaluative interview

School leader F was involved in two large projects the school itself had commissioned, and because of that had not found the time to study the letter with research links connected to the school questions.

I realize that I did not find the time to use the information in the letter, although I think that this might be worthwhile. I would have to study the literature suggested in the letter, however, outside working hours. I did send the information to the colleagues in my leadership team, but nothing came out of that. We are kept busy with all the things that happen every day in a school.

Furthermore, we commissioned two investigations ourselves, one quantitative research project into the characteristics of youth that potentially may choose for our school, and another qualitative research into the expectations of parents in this part of the city.

We are putting a lot of effort in attracting enough pupils for our academic tracks, and try to prevent losing many of our talented pupils to schools in the city centre.

The Principal, moreover, thinks that inspiring cooperation with other schools might be more effective than the use of scientific research outcomes. When a strategy has proven to work in another school, the chances are it will work in your school as well. She also critically questions the further training of research skills for teachers, and rather emphasizes the importance of peer learning and examples of good practice in other schools.

5.5 Findings

In this Section we will describe our findings, following the order of the research questions we presented in Section 5.3.

The rich interviews taught us that school leaders do indeed have important questions that in most cases had already occupied their thinking for a long time.
A tailor made transfer of scientific knowledge to school practice

Among a total of 21 questions, in three cases the question could not be linked exactly to a research publication. In all other cases, a match could be made with one or several research publications. Considering the three question that could not exactly be matched, in one case the question was aimed at the long-term effects of the specific didactical model of school C; no such research was found, but we nevertheless found relevant research publications that well-approached the school leader's question. A question on the best options for financial investment in school D, would need a much wider literature study to link options exactly to this particular school; our answer was more generally directed at the paramount importance of teacher quality. A third question that could not directly be addressed was asked by all six school leaders, and concerned the wish for data on the future achievements of former students, in higher education, and on the labour market. This recommendation will be discussed with the ministry of education.

The questions could be clustered around five main themes:

1. Segregation of schools
2. Tracking in secondary education
3. The balance between skills and competences on the one hand, and cognitive learning on the other hand
4. Teacher quality
5. School innovation and leadership

The categories of questions, plus the suggested literature references are presented in Table 5-1; for every literature reference a typology of the publication has been added in this table. Table 5-2 illustrates the categories of publications that were used per cluster of questions. Table 5-3 gives an overview of how the Principals have experienced our method, how they made use of the new knowledge, and how they thought about the feasibility for scaling up the current project. Table 5-4, finally, shows more in detail how the Principals had made use of the suggested research (conceptual, process, symbolic, and instrumental).

Taking into account the different context of every individual school, the same- or a largely similar question (e.g. on segregation and diversity), resulted in different best matches with scientific literature.
In five out of six participating schools, the suggested research had mostly been applied for: 1) reconsidering current strategies; 2) supporting current strategies; 3) developing new policies; 4) internal and external debates; and 5) making a motivated choice out of contradictory research outcomes on the same subject (Table 5-4). In the case of five schools the suggested research was used to further elaborate the role of the school in its specific environment; in four schools the suggested research publications were used to assess current practices, and four school leaders had used the new insights in external debates. One school leader suggested that the translation of relevant research to concrete teacher practice could be enhanced by a follow up project. One school leader felt that illustrative examples in other schools might be more effective than academic research literature.

We encountered the unanticipated problem, however, that 14 out of the 25 publications were only accessible in the university environment: universities pay substantial licence fees to allow researchers to study scientific journals. As a consequence, a considerable part of the publications we selected could not have been found by school leaders themselves in the first place (apart from the need to possess the research skills to be able to identify appropriate matches between question and answer) since schools can never afford these substantial licence fees.

In Schools A, B and E, shortly after the Principals had received our letter with links to applicable research, an extra intermediate meeting was planned to explore the options for using this new information. In the case of the other Schools, C, D and F, the evaluative interview was the first occasion to discuss the letter. In this last set of schools, the evaluative interview much resembled the extra explorative interview held in the first three schools.
Table 5-1: All school questions clustered in five domains, plus matches with selected scientific publications and the nature of every publication.

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Literature reference</th>
<th>School</th>
</tr>
</thead>
</table>

Table 5-2: Categories of selected research publications, per cluster of questions. (Note that the same publication may be suggested to several schools; e.g. 5 meta-review studies were matched 15 times with a school question).

<table>
<thead>
<tr>
<th>Category of research</th>
<th>Segregation</th>
<th>Tracking</th>
<th>Cognitive Learning and Skills</th>
<th>Teacher Quality</th>
<th>Organization and Leadership</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causal Evidence, Randomized (quasi-) Experiment</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>(Meta-) Review</td>
<td></td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Case Study</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>(International) Comparative Study</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Report</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Book</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Empirical Study</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
Table 5-3: Overview of the outcomes of the evaluative interview. Schools A, B, and E had an extra intermediate exploratory discussion.

<table>
<thead>
<tr>
<th>School</th>
<th>Overall impression</th>
<th>Information shared with others</th>
<th>How was the suggested research used</th>
<th>Influence on views on the school context</th>
<th>Method interesting for other schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Relevant selection of literature useful, albeit not all school questions could be answered directly.</td>
<td>Yes. Discussed with school board and with teachers.</td>
<td>Recommendations have strengthened the school in the complex redefining of strategies.</td>
<td>Better understanding of complex relationship between context and school.</td>
<td>Research input worthwhile for groups of cooperating schools.</td>
</tr>
<tr>
<td>C</td>
<td>Connection between research and practice offers important new insights.</td>
<td>Yes. With vice-Principal and friends.</td>
<td>Scientific basis supports current project to re-define school didactics.</td>
<td>Research not yet used.</td>
<td>Follow-up important: translate research to teacher practice.</td>
</tr>
<tr>
<td>D</td>
<td>Grateful for insight into research base for complex school questions.</td>
<td>Yes. With colleagues school leadership and in meetings with other schools.</td>
<td>Influence on conceptual thinking most important and appreciated.</td>
<td>Supported development of strategies.</td>
<td>Use method for clusters of cooperating schools.</td>
</tr>
<tr>
<td>F</td>
<td>Due to pressing school developments, no time yet to study the letter.</td>
<td>Send to management team and teacher project. Not discussed.</td>
<td>-</td>
<td>-</td>
<td>Illustrative good practices in other schools more relevant.</td>
</tr>
</tbody>
</table>
Table 5-4: Application (after Johnson, 1998) of research outcomes by school leaders after three months.

<table>
<thead>
<tr>
<th>Type of Application</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conceptual</td>
<td></td>
</tr>
<tr>
<td>1a: rethinking strategies</td>
<td>3</td>
</tr>
<tr>
<td>1b: new projects</td>
<td>1</td>
</tr>
<tr>
<td>1c: school’s role and societal issues</td>
<td>5</td>
</tr>
<tr>
<td>2. Process</td>
<td></td>
</tr>
<tr>
<td>2a: support current practices</td>
<td>4</td>
</tr>
<tr>
<td>2b: used in discussions with board of overseers</td>
<td>1</td>
</tr>
<tr>
<td>2c: support current decision-making</td>
<td>2</td>
</tr>
<tr>
<td>3. Symbolic</td>
<td></td>
</tr>
<tr>
<td>3a: use in external debates</td>
<td>4</td>
</tr>
<tr>
<td>3b: use in political debates</td>
<td>1</td>
</tr>
<tr>
<td>4. Instrumental</td>
<td></td>
</tr>
<tr>
<td>Direct use in teacher practice</td>
<td>2</td>
</tr>
</tbody>
</table>

5.6 Conclusions and Discussion

In the current explorative study we have made an inventory of existing questions on the subject of improving educational quality in six urban schools, and tested a practical method for matching these themes to relevant and manageable outcomes of existing high-quality research. We have described both the characteristics of the questions and the categories of scientific publications that matched these questions. In the course of the project, we found that taking into account the specific context of schools and a timely and precise match between questions and answer may add to an effective use of existing research in schools. Furthermore, we described the ways school leaders made use of the presented academic knowledge, and mention the obstacles we encountered concerning the use of academic knowledge in schools. We made an inventory of the evaluative remarks that the participating Principals made of the current project and their suggestions for expanding the project to other schools. On the basis of these suggestions, we reflect on the feasibility of an intermediate function between educational research and practice, and report on concrete follow-up.

5.6.1 Principals have questions that can be linked to research outcomes

Considering our first research question, we have found that school leaders do indeed have important questions, which in their view demand an academic knowledge basis. As we expected, we found that research publications only rarely reach the school. Typically, school leaders learn about new educational developments through thematic reports or publications on government policies. However, in most cases, these publications and policies do not coincide with current school themes.
Out of a total of 21 school questions, all but three questions could indeed be matched with existing research publications that could be translated to school strategies and practice (Research question 2, Table 5-1). For the three questions we could not match exactly, we found an approximation in two cases, and we will try to put the third question up to the higher level of the research agenda of the Ministry of Education (the question addressed long-term monitoring data on former pupils).

5.6.2 Comparable questions, different approaches

Considering Research question 3 (the nature of questions and answers), the main questions could be clustered in five domains (Table 5-2): 1) segregation of schools; 2) early tracking; 3) the balance between cognition and skills; 4) teacher quality; and 5) innovation. Although schools may have comparable questions, depending on their context the most appropriate answer may be different. To illustrate this, we consider the example of the questions in the cluster "segregation", concerning the best strategy for serving students from non-academic families, notably students with a migrant background. This type of question was raised by all school leaders. In one case we suggested research that demonstrates the positive effect of close cooperation with parents, because this particular school was located in a neighbourhood with many migrant parents who themselves did not have the opportunity to enrol at the level of academic learning when they were young. In another school, however, we presented research into the beneficial effects for all students of additional prestigious courses in academic thinking, because this particular school ran the risk of losing its most talented pupils to schools with a higher SES population in the city centre. Yet another school, convinced of the added value of a diverse student body, wanted to attract more first time academic learners, whereas the school was increasingly attracting middle and upper class pupils because of its special emphasis on the Arts. In this case, we suggested research into magnet schools that invest in the arts to enhance opportunities, especially for children with a non-academic background.

As Table 5-2 shows, most of the publications we selected presented causal evidence (10). The choice for a review or a case study publication was usually motivated by the fact that the Principal had specifically asked for illustrations of the use of alternative strategies. Note that the same publications may have been suggested to
more than one school. They valued, furthermore, publications that offer an overview and analysis of large numbers of articles on a specific theme, because this offered them more comparative insights.

5.6.3 Actual applications of academic knowledge and impediments

Our overall finding is that a match with existing school questions can—according to the interviewed Principals—in important ways contribute: to developing school strategies; offer support for current policies; inspire communication with the school board, and strategic discussions with neighbourhood and municipal (political) governors (Research question 4). After only three months, in the case of 17 out of 21 of the school questions, five out of six Principals had already used the provided evidence for further school development and innovative programmes or as a knowledge base for current processes, notwithstanding the short period of time of three months between receiving our research suggestions and the final interview.

As Table 5-4 illustrates, in most cases the new knowledge and insights had been used to support and inspire conceptual thinking (9 times), especially considering the school’s role in societal issues like segregation. In 7 cases, the research outcomes were used to guide and support current school processes. In 5 cases the information was used in debates with external stakeholders. Instrumental, direct use occurred only 2 times.

The main hurdles in knowledge dissemination (Research question 5) we identified are the following: the Principals indicated that specialized professional skills are needed to match upcoming questions to relevant literature, skills which are not always available in schools. Moreover, the participants confirmed that the structured initial interview had been essential in the articulation of significant themes. However, we also encountered a more serious problem: we found that about 50% of the papers we matched to school questions were not accessible outside the network of the university. Access to scientific papers, in most cases, requires the payment of substantial licence fees, which schools cannot afford.

5.6.4 Contributing to the use of existing research in school practice

Our study suggests that a bridging function between academe and secondary schools could enhance the use of academic knowledge in schools, notably since schools, on the one hand, and research institutes, on the other, obviously have different goals
and organizational incentives (Research question 6). The involved school leaders were of the opinion that it would be worthwhile to expand the method we developed to other schools. They stressed the importance of our tailor-made approach, and were in favour of an intermediate flexible network function, rather than a bridging institute. More specifically, they suggested the development of courses in knowledge based leadership for starting school leaders, and seminars for experienced school leaders to study more in depth main school questions. Furthermore, the involved school leaders suggested initiating clusters of cooperating schools, in order to create opportunities for comparative research based experiments. One of the Principals advocated the start of a cooperative cluster especially for urban schools, since— in his view— urban education appears to be an understudied theme in the Netherlands. Finally, it was suggested to follow-up the current project with research-based strategies for the translation of research outcomes from theory to actual classroom practice.

Important steps have been made by the Ministry of Education, Culture and Science, and by the Netherlands Organization for Scientific Research, to start new cooperatives between researchers and schools in designing a joint agenda for educational research. Additionally, the current research contributes to a more effective use of research in school practice, by linking already existing research publications to school themes. By using existing research, school questions can be addressed in a relatively short period of time.

Several outcomes of the current research initiated direct follow up. 1) A cluster of innovative schools has asked for a programme to be started to link research to school developments as a structural new way of working; and 2) A leading institute offering advanced courses in educational development for school leaders and teachers in all levels of education is interested in scaling up the method we developed. Moreover, opportunities for advanced courses for school leaders aimed at applying research in school practice are currently being discussed.

In summary, the method we developed what may be a first step to make research actually work in schools, when the following requirements for its effective transfer from theory to practice are taken into account:

- Schools should be understood in their specific context in order to match theory accurately to practice.
A timely match between actual questions and research answers is a prerequisite.

School leaders expect a motivated selection and a workable amount of research findings to support their work; neither general reports, nor long lists of publications to choose from, fit their demands.

The participating Principals were mostly interested in academic knowledge that guides their conceptual thinking and decisions on school strategies, related to the school environment—both the surrounding community and societal themes.

According to the Principals, in-depth discussions between researchers and school leaders which explore options for making use of academic knowledge can contribute in major ways to the transfer of research from theory to practice.

The start-up of a flexible network consisting of school leaders and academics will be further elaborated.

A serious obstacle needs further study: academic articles, in many cases, are not freely accessible outside the university environment because of the licence fees required to access scientific journals.

5.6.5 Contributing to research into the valorisation of scientific knowledge

The findings in the current case study may also contribute to research in the domain of the valorisation and utilization of knowledge. In the current study we tried to avoid epistemological discussions (except an occasional reflection) on the intricate differences between the culture of academe and school practice. We focused, more concretely, on designing an intermediate practice that acknowledges the characteristics of both worlds, and yet sets out to establish a connection that makes research actually work in schools. The participating Principals supported the feasibility of expanding our method to secondary education at large. As to the question what competences professionals in an intermediate network function should have, principals expressed the view that working experience in both worlds should be a strict requirement; this may include both school leaders with research experience and researchers who actually worked inside schools for a longer period of time. All participants agreed that flexible tailor-made networks consisting of scholars, professionals in schools and policy makers could in important ways add to the effective use of scientific knowledge in educational practice.
5.6.6 Limitations and further research

An obvious limitation of our study is the short period of time (three months) between sending the response to the questions raised in the first interview, and the final evaluative interview. The results of knowledge-based interventions may require monitoring over a longer period of time. Furthermore, as one of the Principals stated, the utilization of academic knowledge might benefit from follow up programmes on the actual translation of research to classroom practice. We consider that further research into the possible effects on school outcomes of knowledge-based interventions to be our most important subject for follow-up research. Clusters of cooperating schools may offer interesting opportunities for the set-up of experiments. Additionally, we consider our study among six schools as a pilot for a project involving a larger number of schools.

Finally, an interesting future experiment would be to investigate whether different researchers, who are also experienced in secondary school practice, would make comparable matches of a given question with existing research publications.
5.7 **Appendices**

**Appendix 5-1:** General characteristics of the six participating schools.

<table>
<thead>
<tr>
<th>School</th>
<th>Tracks</th>
<th>Extra Profile</th>
<th>Number of pupils</th>
<th>Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Senior general, Pre-university</td>
<td>Extra opportunities for migrant pupils in Years 1 and 2; Assisted homework, extra reading and maths</td>
<td>495, substantial growth</td>
<td>Dedicated to supporting pupils who will be the first in their (migrant)family to continue at university level</td>
</tr>
<tr>
<td>B</td>
<td>Pre-vocational, Senior general, Pre-university</td>
<td>Combined comprehensive Years 1 and 2, to promote learning between all pupils</td>
<td>1615, stable</td>
<td>Balancing personal growth and high learning goals for a very diverse student body.</td>
</tr>
<tr>
<td>C</td>
<td>Pre-vocational, Senior general, Pre-university, Gymnasium</td>
<td>Dalton school, extra opportunities in the Arts, Professional theatre and music studios</td>
<td>1205, growing</td>
<td>Pupils learn to take own responsibility for learning. Partially tailor-made curriculum according to pupils' choice.</td>
</tr>
<tr>
<td>D</td>
<td>Pre-vocational, Senior general, Pre-university, Gymnasium</td>
<td>Sports class (top sport potentials) Art &amp; culture class; Technasium; Bi-lingual track in English and Dutch</td>
<td>1765, growing</td>
<td>To be a strong context-oriented school and serve all pupils who live around the school.</td>
</tr>
<tr>
<td>E</td>
<td>Pre-vocational, Senior general, Pre-university</td>
<td>Innovative school, using evidence-based research for the design of an interactive learning community</td>
<td>353, newly-founded school, growing fast</td>
<td>Creating a community of learners in open interaction with the school’s context and society at large</td>
</tr>
<tr>
<td>F</td>
<td>Pre-vocational, Senior general, Pre-university, Gymnasium</td>
<td>Bi-lingual track in English and Dutch.; Cooperation with primary schools for high potential pupils</td>
<td>902, growing</td>
<td>Committed to stimulating upward mobility to a higher track for a majority of pupils with a migrant background</td>
</tr>
</tbody>
</table>

**Notes:** For ISCED qualifications see footnote 3. Gymnasium is a pre-university track with extra courses in the classical languages Greek and Latin. Dalton is a didactical concept based on the ideas of Helen Parkhurst.

**Appendix 5-2:** Format of the first interview

Before the actual interview started, the interviewees were informed about the purpose of the study: to identify core questions concerning the school's performance,
that are regarded to be school or context specific. Secondly it was explained that the questions would be the starting point for a review of the relevant academic literature; the quality standards for the selected articles were clarified, notably the requirement that the research findings could be translated to school practice or strategic developments. The interviewee was informed that we would provide an answer by letter to the raised questions consisting of no more than six pages. Finally, the evaluating interview was announced, three months after the letter had been received. In Schools A, B and E an extra meeting, shortly after the letter was sent, was planned. All interviews were recorded with permission. The confidentiality of the discussion was guaranteed.

Phase 1
- For the record, a brief overview of the school's administrative school characteristics was asked (number of pupils, staff, offered secondary tracks, extra programmes, composition of the student body).
- How would you describe, in ways that are meaningful to you, the school context?
- Could you describe where your pupils come from, how many live close the school, how many pupils does the school attract from other city districts or from other towns?
- Could you describe which context, staff, or pupil characteristics have influenced school policies?

Phase 2
- Could you elucidate how context and pupil characteristics have been translated to specific, demonstrable school practice and strategies?
- What kind of knowledge, data and information supported these decisions?
- Were stakeholders (e.g. parents, the governing board, local political government) in any way involved in these discussions?
- Does the school have a special didactical concept, a specific mission, or motto?

Phase 3
- Did the characteristics of the school and its context that we discussed, lead to specific views on your role as a school leader.
• With reference to school quality improvement as a continuous process, what are the most significant themes, questions or obstacles on your agenda? Could you select those themes that are within your span of control as a Principal, but that require, for example, because of their complexity, or because these are highly specific concerns for your school, additional knowledge and insights. What, in your view, makes it difficult to acquire appropriate knowledge?

• Could you select three to five questions that you consider to be crucial?

• The interview was concluded with the question whether the Principal had missed something in the dialogue, or wanted to add information. At the end of the interview the time schedule was briefly repeated.

Appendix 5-3: Questions for the evaluating interview

1. Could you describe how you experienced this research project (associations, images, metaphors)?

2. Did the matches with academic knowledge influence your thinking or your work? Could you describe if and how you could apply this knowledge? Did you discuss the matches of scientific outcomes with the management team, teachers, or external parties?

3. When you actually did use the information that was offered, and in what way did you use this? a) Direct practical application, b) conceptual thinking, c) influence on current school processes, d) used in discussions with external parties.

4. In interview 1 we started with your reflections on the school's context and how these context characteristics lead to school strategies and practices. In this final interview we ask the mirror of this initial question: did the presented matches with research influence your views on the school's context?

5. Would it be worthwhile to scale up this method? If so, do you have critical remarks and suggestions? Could you describe your views on the characteristics of an intermediate role between academic research and schools?
Appendix 5-4: Questions and matches per school

School A

Q1 Is it an advantage for pupils to be enrolled in a school that is specialized in upward mobility, albeit segregated, or would pupils be better prepared for a full and meaningful participation in Dutch society if they were to attend a desegregated school.


Q2 Should recruitment policies aim at hiring more teachers with the same background as pupils? Would teachers with the same migrant background enhance the learning and identity building of migrant pupils?

A2 Dee (2004).

Q3 Which examples could inspire the school in translating specific school characteristics to class room practice?

A3 The Centre for Multicultural Education of the University of Washington was suggested as a source for illustrative programmes and academic publications on multicultural learning, (http://education.washington.edu/cme/). Furthermore, the Stanford Centre for Opportunity in Education (http://edpolicy.stanford.edu) and the Dutch "Echo" programme with university students acting as mentor for secondary school pupils (www.echo-net.nl/) were advised as examples of interesting networks and good practice.

School B

Q1 Is postponed tracking chiefly benefitting pupils with a non-academic family background, or is comprehensive learning benefitting all pupils? Related to this, how can the best balance be created between cognition on the one hand- and non-cognitive skills and personal growth on the other hand, notably for low SES pupils?


Q2 In the Principal’s view, the development of academic learning skills, excellent language skills, and academic reasoning is an especially important mission for a secondary school with a large number of pupils with a non-academic background.
Does research support this view, has research been carried out on the effects of different classroom practices for academic learning strategies?


Q3 This third question was raised by all other interviewees: the school would be very interested in longitudinal data on study success and access to the labour market of its own former students; this was considered to be crucial information for evaluating the quality of teaching, didactical practices, and strategic choice.

A3 Privacy laws and regulation severely limit this type of school based information on individual former students. Since all six Principals brought up this issue, this question, obviously, will be followed up by further exploration of options with the Ministry of Education.

School C

Q1 Has research been carried out that demonstrates that the school's specific didactical system (Dalton), and the emphasis on the Arts, can potentially reinforce the emancipation and upward mobility of underrepresented groups in higher education and the higher strata of the labour market?

A1 In the present study, this turned out to be a difficult question to answer precisely. We choose to take as a proxy for the school's specific didactical system, the example of magnet schools (Notten, 2009). Furthermore, the aforementioned Center for Multicultural education at the University of Washington provides research findings on the importance of cultural education and the arts. The OECD, in its publication Education at a Glance (OECD, 2011), finally, argues that the success of the Finnish system may be explained by, among other indicators, the combination of comprehensive education until age 16 and flexible ability grouping. This combination seems related to school C's model.

Q2 The second question is also related to the school's didactical model: Does research offer insights into organizational development models in which teachers take a major role in exploring, implementing and monitoring innovative teaching methods?

Q3 Third, the Principal was interested in research on the effects of grade repetition and examples of successful other practices to respond to the learning tempo of pupils.  
A3 (Välijärvi and Sahlberg, 2008).

**School D**  
Q1 The director was particularly interested in a firm research base for postponed tracking, in the context of learning in diverse groups.  

Q2 Considering that most pupils at School D have a migrant background, the director was concerned about the effect of prejudice and stigmatizing that pupils may encounter. He was especially interested in research on the long-term effects of stigmatization.  

Q3 Suppose the school had extra financial resources, what would, according to scientific research, be the most effective intervention for further quality development?  
A3 It turned out to be very complex to answer this question on the allocation of extra resources specifically for this particular school. Academic literature puts a focus, however, on the quality of teachers as paramount: Brown (2007), Jackson and Bruegmann (2009), McKinsey & Company (2007).

Q4 The school is well equipped for computer supported learning: What are the best research-based practices that could guide the school in the optimal use of e-learning?  

Q5 Which studies can further inform the school about effective strategies for innovating the organization of learning, notably interactive learning with the school's environment?  
School E
Q1 The main questions concerned the balance between innovative learning, while maintaining the high cognitive standards of the national final exam, and, furthermore, a research base for interactive learning with the environment.
A1 Heckman and Montera (2009), Payne (2010).
Q2 Secondly, the Principal was interested in a knowledge base for effective leadership in innovative schools
A2 Sanders and Harvey (2002).
Q3 Since school E is organized in smaller unities with sub teams of teachers, more insight is required in best evidence for effective teacher cooperation and training.
Q4 The hiring of new teachers is an important strategic advantage of a newly founded school with a constantly growing student body; what teacher qualities correlate positively to learning outcomes?

School F
Q1 The Principal inquired after illustrative extra programmes at other schools, additional to the standard curriculum, aimed at creating extra opportunities for pupils, like the example of magnet schools in the U.S.
Q2 Research convincingly demonstrates that no other factor has such a large effect on learning outcomes as teacher quality. In School F, where teachers constantly work on the upward mobility of their students, this may be even more important. What elements of teacher quality matter especially, and what research skills should teachers develop in order to effectively monitor the effects of their teaching methods?
Q3  Furthermore, a question is raised on the relatively under-used opportunity in Dutch education to use the influence and authority of the Principal in selecting personnel, and his or her role in stimulating effective cooperation among teachers.