The sustainability of the datateam method

A qualitative study of the implications for practice and policy and differences between schools

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Foreword

In 2008, I graduated from high school. Afterwards, the long journey of college began. After five years, with a bachelor's degree from the University of Groningen in possession, I ended up in Enschede, where I started with the master's programme Educational Science and Technology. This thesis symbolises the endpoint of all these wonderful years as a 'student'.

In the beginning of this master's programme, there were three classes about the datateam method, lectured by Kim Schildkamp. For me, this was one of the more interesting classes up until that point. Later on, I found out that Kim Schildkamp was looking for students to do their master's thesis in this research topic. For me there were no doubts and I did not hesitate to contact her. This way, I ended up writing a thesis about the sustainability of the datateam method. From February, when I started with the thesis, up until August, I was guided by Kim Schildkamp as well as the second supervisor, Cindy Poortman. I want to thank you both for always being ready to answer my questions and to read my draft versions of the thesis and providing me with feedback.

The greatest deal of gratitude however, I owe my parents. For this thesis, I had to travel to differing places, in order to be able to interview the respondents in the thesis. My parents were always willing to lend me a car, as long as I filled up the tank afterwards. Moreover, during the last six years, my parents have always supported me, and not in the least financially. I really want to thank you both for this. With the completion of the thesis, this era ends.

Niek van der Veen
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Summary

In the datateam procedure, teams of teachers and school leaders are formed who collaboratively learn how to use data, following a structured approach. During the first two years, data teams are supported by an external trainer. However, the question is whether and how teams proceed after the external support has been finished. In addition, the question is how data teams influence practice and policy. Therefore, this study focused on the implications of data teams for practice and policy, as well as the sustainability of the datateam method. A literature review was conducted to uncover factors that might influence the sustainability. Six schools were selected to be a part of the study. At these schools, a total of 20 interviews were conducted. Also, school plans and school prospectuses were analyzed. The results reveal that the datateam method has had several implications for practice and policy, for example the reduction of educational problems and the development of skills in collecting, analyzing, interpreting and using data among teachers. Furthermore, three of the six data teams were continued. A number of factors seemed to be of influence on the sustainability of the method, including a vision on data use, the involvement of teacher-leaders and shared decision making. The influence of these factors on the sustainability and their interrelatedness are discussed, as well as the differences between schools. Also, directions for future research are given.

1. Introduction

In the Netherlands, schools are responsible for the quality of their education and have considerable autonomy in making choices related to this quality (Schildkamp, Lai & Earl, 2013). There are, however, certain legal requirements for schools to monitor their own quality, as well as regular school inspections. These legal requirements and inspections result in multiple sources of data, such as evaluations of quality aspects, e.g. the quality of teaching. In combination with other data, such as students' scores on assessments, the quality of the school can be evaluated. Also, schools can use data to evaluate the effectiveness of programs and practices and identify areas of improvement (Mason, 2002). Data could also be used for instructional purposes, to reflect on teaching or management practices, to identify areas of need and target resources, and for decisions related to personnel. When data are used to inform decisions in these areas, this is called data-based decision making (Schildkamp et al., 2013).

In data-based decision making, decisions are based upon a broad range of data, for example students' scores on assessments and observations in the classroom. In the context of schools, 'data' are defined as information that is collected and organized to represent some aspect of schools. There are multiple sources of data, including context data such as survey results about school culture, input data such as demographics of the student population, process data such as data on the quality of instruction and class observations and outcome data such as student test scores (Schildkamp et al., 2013).

Decisions in areas ranging from professional development to student learning should be informed by data, since this can lead to increased student achievement and school improvement (Datnow, Park & Wohlstetter, 2007). However, it is not uncommon for teachers to base their decisions on intuition and instinct (Slavin, 2002). Research has shown that schools often do not use data for school improvement (Ledoux, Blok, Boogert & Krüger, 2009). Schildkamp and Kuiper (2010) also found that too few data are used within schools. A possible reason for this is that the necessary data are not readily available to make an informed decision. Also, it is possible that teachers or school leaders are of the opinion that data are not needed to make decisions. Moreover, teachers or school leaders may experience a lack of skills for using data effectively (Schildkamp et al., 2013).

The use of data has become more and more important within secondary education, although it is a relatively new concept in the Netherlands (Schildkamp et al., 2013). Data-based decision making however, implies that teachers and school leaders know how to analyze, interpret and use data in an effective way. Thus, schools need support in the use of data. Therefore, the datateam method was developed (Schildkamp et al., 2013).

The aim of the datateam method is to support schools in the use of data. By using data effectively, schools are able to evaluate the quality, and individual teachers are able to reflect on their own practices. The data should be used in making decisions, for example regarding student learning.

In the datateam method, small teams are formed consisting of (4-6) teachers and (1-2) school leaders. In these teams, data are used to solve educational problems, using a structured approach. An important element of the method is that the teams work collaboratively. School leaders are part of the data team, because school leaders often have a different perspective on a particular problem. Therefore, new hypotheses can be brought to the table. Also, the school leader does not have to be convinced of implementing the outcomes of the data team afterwards, because of involvement in the process from the start. Examples of problems that can be discussed in teams are above average retention rates, disappointing results for a specific subject, and declining exam results (Schildkamp et al., 2013).

The teams are supported by a coach from the university over a period of two years. Under the guidance of this coach, teachers in the data teams learn to systematically use data within the school. An iterative and cyclic procedure is used in these teams, consisting of eight steps. These eight steps are formulating a clear problem definition, formulating a hypothesis (about what may be causing the problem), collecting and analyzing data, as well as checking if the data are valid and reliable, drawing conclusions based on the data, implementing improvement measures and evaluating the effectiveness of these measures. After external support ends, teachers and school leaders are expected to lead their own data teams (Schildkamp et al., 2013). Thus, teachers and school leaders should be able to continue the method after two years of training.

Since 2009, 37 data teams have been active within Dutch schools. The datateam method has the potential to help schools in using data in an effective way to improve the quality of the school and to enhance student achievement (Schildkamp & Poortman, forthcoming). However, given the fact that the method is relatively new, not much is known about the effects on practice and policy. Moreover,

relatively little is known about the sustainability of the datateam method. The first two years, schools are guided and supported by a coach from the university. The question is however, how data teams influence practice and policy, and whether and how teams proceed after external support has ended. These are topics that have yet to be explored.

Implications of the method for practice and policy as well as the sustainability of the method are topics that need to be examined. The topic of implications for practice includes questions about the implementation and continuation of the outcomes of the data teams. Implications for policy could for example include the datateam method being present in the school plan and policy documents. The main question concerning the sustainability is whether schools have continued the datateam method without the support of the university. Also, the possible formation of extra data teams is relevant to the sustainability of the datateam method. Finally, the aim was to explain differences between schools. The following research questions were formulated:

1) What are the implications for practice and policy of working with the datateam method?
2) To what extent is the datateam method sustainable?
3) How can differences in sustainability of the datateam method between schools be explained?

By answering these research questions, the aim was to contribute to the datateam method, as it could offer insights in what contributes to the fact that the method is or is not continued within schools. Next to these practical contributions, this study aims at making a scientific contribution, by offering insights in factors that contribute to the sustainability of the method. This way, the study could help in deepening the existing theory about the sustainability of educational reforms.

2. Theoretical overview

2.1 The implications for practice and policy

In the datateam method, school leaders and teachers are provided with opportunities to develop their knowledge and skills needed to collect, analyze, interpret and use data (Schildkamp & Kuiper, 2010; Schildkamp, Poortman & Handelzalts, forthcoming). Therefore, the datateam method is expected to lead to more 'skilled' teachers. Also, the data team wants to solve an educational problem (Schildkamp et al., forthcoming). For that reason, an implication of the method could be solving, or reducing, this problem (Schildkamp, Handelzalts, Poortman, Leusink, Meerdink, Smit, Ebbeler & Hubers, 2014). Another implication might be that conversations about educational problems become based upon data, instead of gut feeling. When the data team did not finish the eight steps of the data team procedure yet, but somehow did contribute to changes in practice, e.g. the way of examination, this could also be seen as an implication for practice.

Implications for the policy could include the school taking up the activities and the goals of the datateam method in the school plan and the school prospectus. Also, when the data team contributes to the fact that the policy of the school is more focused on the use of data in the school, this could be seen as an implication for policy.

2.2 Sustainability of methods

Several educational reform attempts have proven to be lacking sustainability. Sustainability can be seen as the capacity of an educational reform to continue. However, according to Hargreaves and Fink (2000), sustainability also implies that educational change is developed without compromising the development of other initiatives in the surrounding environment. According to Fullan (2007), sustainability is the capacity of a system to engage in the complexities of continuous improvement consistent with deep values of moral purpose. In this context, moral purpose should be seen as a commitment to raise the bar and closing the gap of student achievement, improving the environment, treating people with respect and engaging in the big picture of national policy and societal goals. For this study, the definition as formulated by Fullan (2007) was used. The Inspectorate in the Netherlands wants schools in secondary education to use more data. Next to this, data teams aim at improving student achievement and teacher practices. Therefore, the datateam method appears to serve the moral purpose of which Fullan (2007) speaks.

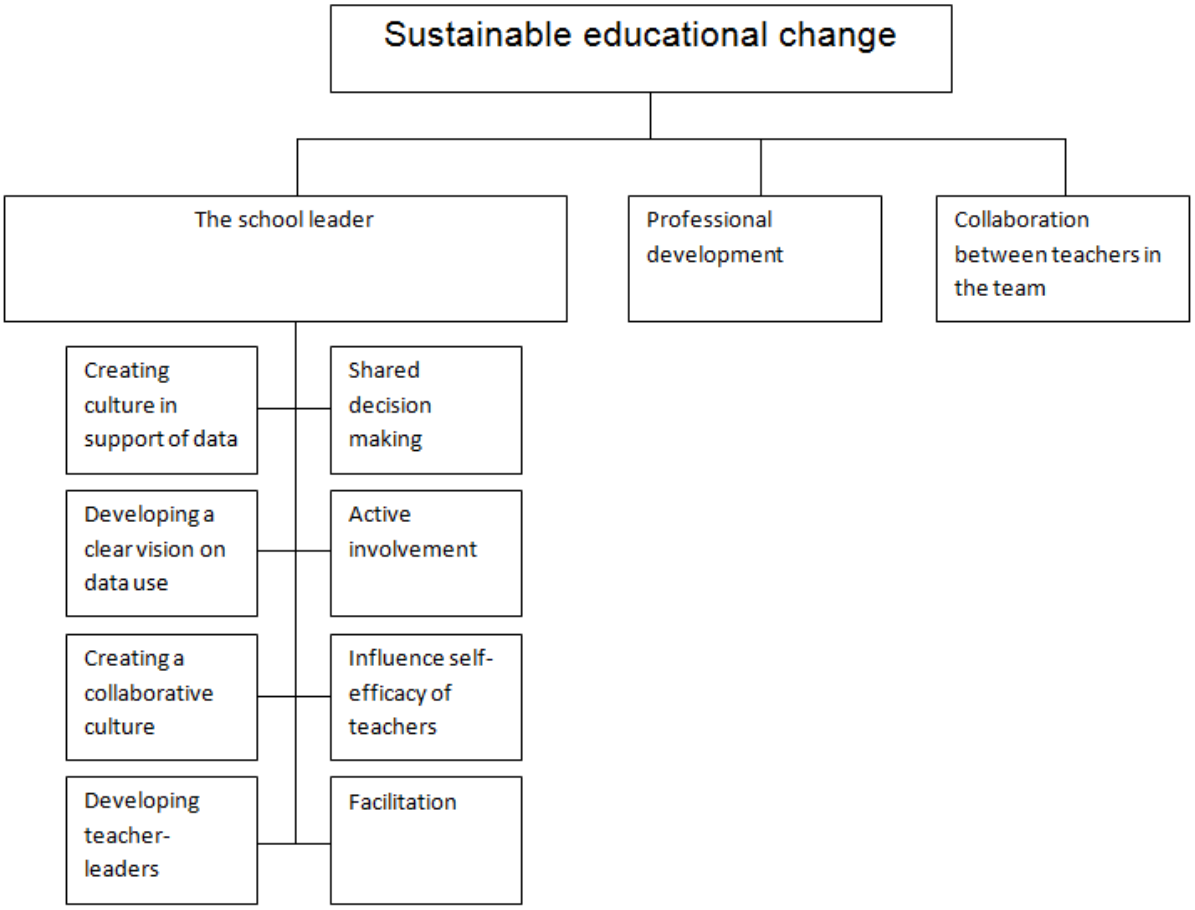
For Fullan (2007), relationships are at the heart of any educational reform. The sustainability of an educational change is always the result of the interrelations between and across groups at various levels, such as the school level and the classroom level, in differing contexts and at various points in time.

Thus, for an educational change to be sustainable, it has to endure over time. Therefore, the continuation of the data teams is an important topic in this study, as well as the formation of new data teams. There are three scenarios in which the datateam method is considered as sustained. The first scenario is when the original data team is still active within the school. In the second scenario, one or more new data teams have been formed. Such a team would consist of teachers and school leader(s) that were not involved in the original data team, possibly guided, however, by some members of the original data team. Finally, it is possible that the data team is no longer active. However, when the datateam method contributed to the fact that teachers and school leaders use data in the school, e.g. to inform decisions, this could be seen as a form of sustainability, as the datateam method aims at supporting schools in their use of data. Thus, a school could have 'sustained' the datateam method, without the continuation of the data team itself.

2.3 Factors facilitating sustainability

According to Fullan (2007), the school leader is the key to both implementation and continuation of an educational reform. School leaders have a key role in persuading and engaging teachers to participate in the educational change as well as motivating teachers. Factors that are influenced by the school leader will be discussed in the next section. Also, the importance of professional development and collaboration between teachers in the team are discussed. In figure 1, the factors that influence the sustainability of an educational change are summarized.

Figure 1



2.3.1 The role of the school leader

The role of the school leader is considered essential in the literature (Fullan, 2007; Hargreaves & Fink, 2000). The school leader plays a crucial role in motivating, encouraging and supporting teachers (Fullan, 2007). In the datateam method, the principal of the school often does not participate in the team. Therefore, school leaders in this study are all members of the school management team. The goal of leadership is to build engagement, partnership and skills necessary for sustainable educational change (Levin, 2012).

One of the core tasks of the school leader in realizing data-based decision making within the school is creating *a culture of data use* (Levin & Datnow, 2012; Wayman, 2005; Lange, Range & Welsh, 2012), as the sustainability of an educational reform is affected by the school culture (Sindelar, Shearer, Yendol-Hoppey & Liebert, 2006). For the culture of the school to start embracing the use of data, explicit norms and expectations for the use of data should be created (Lange et al., 2012). A culture which values regular and consistent use of data, or a culture of inquiry, is essential (Datnow, Park, & Wohlstetter, 2007). In such a culture, school staff look critically at data, reflect on their own functioning, and are open to changing their practice when the data reveal the need for this (Schildkamp et al., 2013).

Moreover, the school's *vision* plays an important role in continuing educational change, as a shared vision will make that the change is more likely to endure (Sindelar et al., 2006; Owston, 2007; Sanches & Dias, 2013; Lange et al., 2012). The vision includes a focus on learning and improvement based upon data. Therefore, clear goals for the use of data should be established as well. Especially when external support ends, as in the case of the datateam method, it is crucial to the sustainability that the educational change has been built into the structure of the school, e.g. through policy and the vision of the school (Fullan, 2007). Also, the focus should be on openly discussing data without fear of repercussions. A clear vision for data use could lead to an increased level of teachers' motivation and self-efficacy (Krüger, 2010), as well as an increased belief of teachers in the importance of the use of

data (Schildkamp & Kuiper, 2010).

Furthermore, an educational change is more likely to endure when the school has a *culture of collaboration* (Sindelar et al., 2006). Creating collaborative cultures and structures is seen as a main task of a school leader. This implies a climate of trust (Leithwood et al., 2004; Levin & Datnow, 2012). Such a climate of trust and collaboration is needed as this offers teachers opportunities to discuss data with each other, also outside of the data team. Based upon these discussions, teachers are able to improve practice (Levin & Datnow, 2012). Little (2006) refers to this as a collegial professional culture, in which there is little distance between teachers. Teachers share values and have a collective focus on and responsibility for student learning.

Next to this, a school leader should base strategies on leaders *developing other leaders*, so-called 'teacher leaders', in order to create a critical mass of teachers who are skilled in and committed to the change. This 'critical mass' should be able to continue the educational change. Especially when external support eventually ends, as is the case in the datateam method, this is crucial to the sustainability (Fullan, 2007; Hargreaves, 2002). These teacher-leaders can support the school leader in some of the tasks, for example by providing other teachers with resources and encouragement for the innovation and its new practice (Sindelar et al., 2006). With regard to the datateam method, the functioning of the data team should be independent of the school leader that is involved. Thus, teacher-leaders are able, for example, to initiate team meetings or guide and support a new member in the team.

In addition, giving teachers the opportunity to participate in decision-making, e.g. *shared decision making*, is helpful for the sustainability of an educational change (Sindelar et al., 2006). Thus, for the data teams it is important that teachers and school leaders share responsibilities, such as in decision-making. This applies to all members of the data team, not only 'teacher-leaders'. Team members should have the feeling that the outcomes of the data team procedure are achieved in collaboration. This means that opinions of all participants are valued in the team. Shared decision making will increase the motivation of teachers (Fullan, 2007). In addition, teachers will feel less isolated and more committed (Wahlstrom & Louis, 2008).

Furthermore, the school leader should be *actively involved* in the particular reform to support its continuation. One indicator of active involvement by the school leader is whether meetings related to the method are attended (Fullan, 2007). By being directly involved in the process, teachers will feel taken seriously and the school leader can pass on the enthusiasm about the use of data. This increases the motivation of teachers (Fullan, 2007). Teachers are also more likely to become committed to the reform, when the school leader devotes time to it (Sindelar et al., 2006). A lack of interest of school leaders however, is a reason for educational change to be discontinued (Fullan, 2007).

Another factor is the *influence on the self-efficacy* of teachers (Thoonen, 2012). The self-efficacy of teachers is significant as it plays an important role in teachers being motivated. Moreover, a high sense of self-efficacy is believed to lead to a more open attitude to new ideas and more willingness to experiment with new methods. There are three ways for a school leader to enhance a teacher's self-efficacy. The first one is offering feedback on the use of data. The second one is offering explicit experience by functioning as a role model. Modelling is a physical demonstration of an activity along with an explanation of the thinking process (Marsh & Farrell, forthcoming). Bringing data to meetings to support conclusions is also a form of modelling (Wayman, Spring, Lemke & Lehr, 2012). The last one is verbal persuasion, which could be helpful in convincing a teacher to participate, or to keep participating, in the educational reform. Teachers then, need to be convinced of the 'perceived value'. When a school leader makes sure that teachers believe in the value of the educational reform, this will lead to higher levels of motivation and determination to continue the reform (Owston, 2007). By emphasizing that the educational reform supports student learning, teachers are more likely to participate (Sindelar et al., 2006), and this will lead to more effective use of data by teachers (Wayman, Cho, Jimerson & Spikes, 2012).

Finally, an important task of the school leader is to establish and/or maintain the conditions, i.e. space and time, which are needed for the educational change to keep taking place (Owston, 2007). This is the minimum involvement that is needed by a school leader. Teachers are known to have a lot of tasks. The school leader has an important role in establishing conditions for the educational change to be continued by monitoring what amount of time is needed for teachers to participate in the data teams and by clearing this time in the schedules of the teachers. Therefore, the school leader should make sure that teachers are provided with structured time for collaboration to support the use of data (Datnow & Hubbard, 2014; Lange et al., 2012), and to have discussions about data (Ward-Roberts, 2009; Levin & Datnow, 2012). When external support eventually ends, as is the case in the datateam method, it is crucial that the educational change is built into the structure of the

school concerning budget and timetable (Fullan, 2007). In fact, a lack of time, space or money for staff support has negative effects for the sustainability (Fullan, 2007; Sindelar et al., 2006; Sanches & Dias, 2013). By 'institutionalizing' prerequisites such as space and time, new teachers are also able to 'step into' the reform without experiencing insurmountable problems (Hargreaves, 2002). With regard to the datateam method, it may be important whether teachers received a compensation, financial or in time, for their participation in the data team, whether meetings were scheduled for a longer period or one at a time, and whether teachers' schedules were cleared in order to be able to have data team meetings.

It is important though, to keep in mind that the aforementioned factors influencing the sustainability of an educational change, are not independent of each other. For example, when a culture of data use is created, staff and leaders turn to data, ask questions about it, reflect on the meaning of data and make decisions based on data. Not only shared norms and expertise are developed this way, but this often leads to participants becoming so-called 'teacher-leaders' (Knapp, Swinnerton, Copland & Monpas-Huber, 2006). Thus, to some extent the abovementioned factors influence each other.

2.3.2 Professional development and team collaboration

When a new project starts or when a teacher joins an ongoing project, the individual teacher will have to change. Therefore, professional development is crucial to the sustainability of data initiatives involving teachers (Wayman, 2005; Owston, 2007). Hargreaves (2002) states that for a project to endure over time, long term capacity building is needed. This can be done by developing teachers' skills, i.e. professional development. This capacity building should lead to an institutional culture of continuous learning (Webster et al., 2011). The datateam method could be seen as a form of professional development, with the ultimate goal of school improvement (Schildkamp & Poortman, forthcoming). This form of professional development ends after two years, when the external coach leaves. However, for deep learning to occur, constant support for teachers is needed (Sleegers & Ledoux, 2006). Therefore, opportunities for professional development, such as a course in how to analyze data or additional external support for the team, should be available when necessary.

Professional development can be offered in formal courses, but also through informal learning on the job. In the latter, teachers can learn from their colleagues. Also, when a new member joins the data team, this member should be guided and supported by other team members, and informal learning on the job should occur. Thus, teachers should be able to learn from each other, offer support to each other and be able to solve individual and school-wide problems collaboratively (Owston, 2007). Interactions between teachers are very important, as these provide them with knowledge, feedback and social support. This creates opportunities for teachers to deepen the understanding about the educational change. A deeper understanding about the educational change increases the chances of an educational change to be continued. A lack of social support however, threatens the sustainability (Coburn, Russell, Kaufman & Stein, 2012). Thus, teachers should frequently discuss their use of data, how to improve it, and teachers should be able to give feedback to each other (Little, 2006). The datateam method involves working in a group. As mentioned above, a goal of the method is to solve school-wide problems *collaboratively*. Therefore, informal learning may be a logical consequence of the method.

3. Method

3.1 Sample and instruments

There are currently twelve schools in the Netherlands which have been making use of the datateam method and where the external coach already left. In this study, data was collected from six of these schools. A data team trainer from the University contacted the twelve schools and got information about the data teams. Based on this information, six schools were selected. Three schools were selected that appeared to have continued the datateam method. Also, three schools were selected where the datateam method appeared to be discontinued. Thus, a purposeful sampling technique was used, since this research process is one of 'discovery' rather than testing of hypotheses (Denscombe, 2003). A school leader of each school, which participated in the data team, was part of the research, as well as one or two data team members. This differed per school as in some schools a second teacher who participated in the data team was not available. Furthermore, the data expert, whenever present within a school, was interviewed. The purpose was to portray whether the datateam method was sustained and to define and explain possible differences between schools. Also, it was studied if and how outcomes of the data teams were implemented. The units of analysis were actors involved in the data teams, i.e. teachers, school leaders and data experts.

In this research, data were collected through interviews. In total, 20 interviews were conducted (see table 1). Respondent 10 was the data expert at two schools. As a consequence, this respondent was interviewed about both the schools. Therefore, there were 19 respondents.

Thus, a qualitative method was used. Interviewing was chosen above a survey, since the opportunity to ask for more information and opinions of participants was considered most relevant to answer the research questions. This way, more information is gathered about *why* the method is continued or discontinued. There were separate interview schemes for school leaders, teachers and data experts. All interviews were conducted in the months May, June and July 2014. All interviews lasted approximately 45 minutes. In the interview schemes, questions were related to the themes in the theoretical framework (see figure 1). Thus, questions were asked related to the role of the school leader, to professional development and to team collaboration. Examples of the questions asked are: What was the role of the school leader in continuing the data team? Did you or one of your colleagues ever think that you needed more professional development? In what way do teachers learn from each other within the data team? In addition, the school plan and the school prospectus of all schools were included in the study. Indications of the datateam method and the use of data were collected from these sources.

Table 1

Respondent	Function	Data team
1	School leader	A
2	Teacher	A
3	Teacher	A
4	School leader	B
5	Teacher	B
6	Data expert	B
7	School leader	C
8	Teacher	C
9	Teacher	C
10	Data expert	C/F
11	School leader	D
12	Teacher	D
13	Teacher	D
14	Data expert	D
15	School leader	E
16	Teacher	E
17	School leader	F
18	Teacher	F
19	Teacher	F

3.2 Analysis

All interviews were audio-recorded and transcribed. Themes were induced and clustered into categories corresponding to the research questions and literature themes. Examples of these themes were the way the school leader motivated teachers and in what way the use of data had become a part of the school's policy. After all the interviews had been conducted and transcribed, these transcripts were analyzed. The themes from the literature, as discussed in the theoretical framework, were used in a cross-case and within-case analysis of the transcripts. Patterns of differences and similarities between respondents were highlighted and summarized into tables. An example is shown in table 2. In this table, the presence in the school of a factor influencing sustainability, was indicated with a green space. The absence of factors was indicated with a white space. This way, influencing factors may be identified. Next to the analyses of the transcripts, the school plan and the school prospectus were analyzed. These were screened for terms such as 'data team', 'data use' etc. Any information about the use of data was noted and described in the results.

Table 2

	Active involve-ment	Shared decision making	Culture that supports data use	Culture that supports collaboration	A clear vision on data use	Time for meetings facilitated
School 1						
School 2						
School 3						
School 4						
School 5						
School 6						

3.3 Procedure

The interviews and documents were analyzed in order to be able to answer the research questions. Reliability and validity were addressed based on the procedures described by Poortman and Schildkamp (2011). Data were collected systematically. All respondents were approached in the same way, i.e. with the same interview scheme. The interviews were audio-recorded and transcribed in order to avoid errors and subjectivity and therefore to enhance the reliability. Also, short summaries of the interviews were checked with the respondents, again to prevent errors and subjectivity. Furthermore, a part of the analyses were conducted by a second researcher. This was done to enhance the inter-coder reliability for the coding process. The inter-coder reliability analysis, using the Kappa statistic, was performed to determine consistency among coders. The inter-coder reliability for the coders was found to be Kappa = 0,61 ($p < 0.001$). There was also a supervisor who was engaged in reviewing parts of the data analysis and final reporting, to enhance reliability.

Internal validity was enhanced by highlighting patterns of differences and similarities between respondents. The external validity was addressed by describing the congruence with the theoretical framework. Also, detailed descriptions of the schools were provided. This way, analytical generalization can be applied (Poortman & Schildkamp, 2011). The construct validity was enhanced through the concept of triangulation of data, i.e. through approaching differing respondents and through analyzing the interviews as well as policy documents and the school plan, multiple sources of evidence were used.

4. Results

4.1 Within case analyses

The implications of the datateam method for the school's practice and policy will be discussed here. Also, the sustainability of the method will be discussed. In the literature review, factors influencing the sustainability were portrayed. In line with figure 1, these factors will be described in relation to the individual schools.

4.1.1 Results school A

Context school A
School A focused on a large number of grade repeaters in the third year of havo (senior general secondary education). Also, a number of these students seemed to continue at vmbo-level (pre-vocational secondary education) instead of continuing havo. The ultimate goal of the team was to realize that students were at the right level of education in the third year.

Implications for practice in school A

The datateam method has led to teachers being more skilled in data use, although the biggest impact seemed to be on the way teachers think. The school leader stated: 'Teachers start examining what the real problem is, instead of avoiding any risks. This is a way of thinking which is really starting to grow in the school'. One of the teachers indicated: 'You have a different view of your lessons, of what you do. How effective will this be?' Another respondent stated that the datateam method contributed to the fact that things in the classroom, that are not going well, are identified in an earlier stadium. For example, this respondent constantly evaluated assessment tools and results, and made adjustments in the assessments based upon these evaluations. In addition, teachers were more open for things that were not going well and kept thinking about possible causes of these things. In general, the data team members acquired the skills for collecting, analyzing, interpreting and using data, with the possible exception of the skill of analyzing data. This analysis was conducted by a mathematics teacher, as this was less hard to do for this particular teacher.

The datateam method allowed the school to take some measures, which has led to a reduction of the educational problem. One of these measures was the introduction of a particular way of testing. First of all, there were much more discussions about the prediction of results for the learning path of students. Also, teachers were expected to use assessments that were able to differentiate between students. Such assessments used differing categories of questions, such as 'reproduction' questions and 'insight' questions. Furthermore, the school focused on a more intensive relationship between the student and the tutor.

The method also allowed the data team to reject gut feelings of teachers and school leaders, for example: 'Students are just lazy and unmotivated'. The school leader stated that the datateam method enhanced the quality of conversations with teachers about their practice. It is a way to have 'objective discussions'. Thus, these discussions are more based upon data instead of gut feeling.

An additional implication was that teachers have become more open. Sections were involved by the data team, which allowed them to start thinking in the same way. Everyone in the school knew the data team and what they did. There was a shared opinion in the school that the data team was doing a worthy job. Teachers, in the meantime, feel it is rather 'normal' that data team members interview students and teachers. Also, there were plans to split up the expertise in the data team, to be able to form two data teams. To conclude, both the teachers and the school leaders, in and outside of the datateam, were enthusiastic about the method.

Implications for policy in school A

In the school plan, the data team was mentioned as a goal within the school: 'to work with a data team'. It also stated that a data team should research how to maximize results. This seems somewhat general and abstract and these were the only references towards the data team. The topic of the data team though, was mentioned several times too. However, these were not linked to the datateam method. The topic of the data team and the data team itself were mentioned as separate goals in the school.

The respondents did feel that the datateam method had become an important component of

the school's policy. The school leader did indeed state that the datateam method had become increasingly important within the school. An example of this was the continuation of facilitating the data team, while no money was available for other components within the school. In the school plan, collaboration between teachers in general was strongly emphasized and stimulated, and as a component of this, for example, reflecting on one's own practice *and* each other's practice within sections.

Thus, while the school prospectus did not include the data team or the use of data in the school, the school plan only shortly described the data team. There were implications for policy though. The last two years, the budget for projects was frozen. An exception was made for projects that were really important to the school. The datateam method was such an exception.

Sustainability of the datateam method in school A

The original data team was still active within the school. When the existing data team finished their current research item, about grade repetition, the school leader wanted to start another data team. Current data team members would be spread out over the two teams, as both teams would need the guidance and support of experienced data team members.

Factors influencing the sustainability in school A

A culture of data use in school A

Being reflective and critical about their own practice was seen as important by the respondents, as well as looking back and determining whether one has done the right things. Also, it was stated that one should be open towards things that are not going well, and that one has to keep thinking about what one is doing and why. The school leader also stated that teachers had become more open towards changing their practice and shared data. School leaders attended meetings of sections, and provided sections with goals and expectations. In individual meetings with teachers, data were used by school leaders to formulate points of improvement.

A vision on the use of data in school A

One respondent stated that the datateam method was mentioned in the vision of the school and that it was an important component of the policy. The school provided the data team with additional hours of external support. A respondent stated: 'this indicates how important it is for the school board. That is why there were hours and money available for it.' Also, there was a growing consensus amongst teachers that the datateam procedure is of importance. In the school plan, the focus was on collaboration at all levels. Goals were formulated to improve education. These goals were to be addressed under guidance of school leaders and teacher-leaders. There was a focus on constant learning and improving. The way to achieve this was described as collaboration. The use of data was not explicitly mentioned in this respect.

A culture of collaboration in school A

The data team members informed other teachers about their progress through study days and the teacher bulletin. At such a study day, the school leader involved in the data team informed the school staff about the content and the process of the team. One respondent thought this was rather important, as teachers would feel that the school leaders thought of the datateam method as important, and therefore teachers would take it more seriously. Also, teachers were asked to formulate their ideas about the subject on a whiteboard in the teachers' lounge. Furthermore, team members discussed the progress and the concept of the data team in meetings with their sections. This process of informing colleagues was indicated as rather important, since the input of teachers might be needed sooner or later. One respondent stated; 'we notice that it is starting to live among colleagues as well, and that colleagues notice that they can have input in the process'. The school leader also emphasized that they were trying to 'keep it alive', and that they were succeeding in this.

The last couple of years, teachers have been discussing the use of data in their sections. A respondent stated: 'The collaboration in the section has never been as good as the last couple of years. Meetings are much more intensive.' The sections worked collaboratively on improving their effectiveness. Also, collaboration between teachers was a key element in the school plan.

The development of teacher-leaders in school A

One of the teachers in the team was responsible for the order of business during meetings, for dividing the tasks etc. Another teacher already participated in the pilot of the datateam method before the

current data team and was considered as very experienced by other team members. Both were able to guide new team members. All team members used verbal persuasion in order to convince other teachers to collaborate and provide the data team with input. For example, when a teacher refused to collaborate at first, the emphasis on student achievement was decisive in this process of 'persuasion'. The school leader stated: 'They are visible in the school as members of the data team'.

Shared decision making in school A
Conclusions about data were drawn individually by all team members. During meetings, these separate conclusions were discussed and converted to one overall conclusion. The school leader wanted to do things, for example approaching other teachers for input, together. It should not be dependent of the school leader: 'Because then, if I leave the data team, the whole thing collapses'.

One teacher joined the data team at one point. The process of selecting and approaching this new team member was conducted collaboratively, as this was extensively discussed within the team. One of the teachers stated: 'After discussing it with us, the school leader approaches the new team member [...] but first, we discuss if someone fits in the team'.

Active involvement by school leaders in the datateam method in school A
There was one school leader involved in this data team. This school leader participated in a similar way as the teachers did. One respondent said: 'It is not noticeable that she is a school leader'. The school leader was virtually always present at the meetings. The only involvement by the principal was through discussing the compensation for teachers with the school leader involved in the data team. The principal was never present during data team meetings.

Influencing the self-efficacy of teachers in school A
Teachers received feedback on the use of data by the school leader. In discussions with individual teachers, or sections, the school leader used data to support conclusions about their practice. This could be seen as a form of role modelling. The school leader made use of verbal persuasion when teachers were needed for input. When teachers did not respond to questions of the data team, the school leader was able to persuade these teachers by simply talking about the importance of it. The school leader stated: 'We use data to enhance student achievement. That needs to be emphasized'.

Facilitation in school A
One respondent considered the compensation for participation crucial: 'When there is no compensation, the method will not survive. Therefore, the school board should say: ''We appreciate it and we compensate you for it''. Teachers in the data team were compensated in time for their participation, although this differed per person. This depended on how much time a person spent on data team tasks. The mathematics teacher for example, was more compensated, as this teacher spent a lot of time on the data analyses.

Meetings of the data team were planned in advance for the whole school year. After external support ended however, this did not happen any longer. The meetings were then planned one at a time. The schedules of teachers were not cleared for the data team meetings.

Professional development in school A
After external support ended, the data team was still able to ask questions by e-mailing the external trainer. Also, the school provided the data team with five additional hours of external training. Thus, the data team could ask the external trainer for help in person, with a total of five hours over one school year. The teachers in the data team thought of this as really important. One of the respondents thought that the support of the external trainer would no longer be necessary in the upcoming school year. The school leader had a similar point of view, although it might be needed to ensure the sequence of the eight-step procedure. Another respondent however, was not sure about this: 'I think that it is important to have someone you can contact when you are facing some difficulties'.

One teacher was responsible for the data analysis, as this was a mathematics teacher. The other team members did not possess the necessary skills to analyze data. Both this mathematics teacher as another team member thought that the school should offer some sort of training in data analysis. The school leader in the data team however, did not share this opinion: 'Data analysis is one of the things that you do. I think it is good, when you want to work in an efficient way, that you have one expert who can do the analysis'.

Team collaboration in school A
Teachers in the team were able to learn from each other. There was one teacher in the team who was more experienced in working with the datateam method, as she also participated in the pilot of the datateam method. Other teachers in the team were able to learn a lot from this 'experienced' teacher. Furthermore, teachers provided each other with feedback on the use of data. The school leader was convinced that, for example, data analysis qualities will grow through informal learning on the job: 'You do not learn that in two years'.

At one point, a new teacher joined the data team. This teacher was informed and guided in the first weeks by one team member. One respondent emphasized however: 'Anyone of us could have guided her, that is not the point'. Thus, this teacher was supposed to learn through informal learning on the job.

4.1.2 Results school B

Context school B
School B focused on problems with central examination results for geography. The differences between central examination results and school examination results were too big. The eight step procedure for this topic was finished. The next topic focused on the large number of grade repeaters in the third year of vwo (pre-university education). Also, a number of these students seemed to continue on havo-level (senior general secondary education) instead of continuing vwo. The ultimate goal of the team was to realize that students were on the right level of education in the third year.

Implications for practice in school B

Regarding the skills that were to be acquired by teachers, the data expert stated: 'Actually, everything has been learned in the two years of external training, in which a lot of practicing with the method occurred'. The datateam method also contributed to the fact that its members individually started using more data in their classroom. One of the respondents stated: 'I seriously think I can do more for students'. Twice a year, on study days, one of the team members made suggestions based upon the results of the data team. These suggestions were meant for teachers in the school and could be, for example, about changing some part of their practice or about looking critically at themselves or at certain data about themselves.

The first educational problem that was researched by the data team, was reduced. This was done by paying more attention to which subtopics caused students to fail. Also, in lower secondary education there appeared to be a lot of multiple choice tests, while this was absent in upper secondary education. These were more aligned, by discussing tests in sections and the reduction of multiple choice tests. In the most recent school year, the team started with a new topic. There were no results regarding this new topic yet, and the problem had not yet been reduced.

The school leader already used data at the section-level, but also started looking at the individual level. When a teacher's performance differed from its colleagues, the school leader had a discussion with this teacher about making changes. However, there were no indications of discussions being *more* based on data rather than on gut feeling in the school, except for the data team members.

Implications for policy in school B

The datateam method was a component of the school plan, as the data team and its topic were mentioned. The school plan also stated that the data team would research more topics in future years. Moreover, the team was described with regard to the formation, the goals and the frequency of meetings. It was also stated that the group of participants of the data team could differ, which depended on the topic of research. The school's prospectus did not mention the data team.

Since the datateam method started, the use of data in the school had received more attention as well. For example, the school plan had set expectations for teachers to use data. However, it is not sure whether the datateam method itself had a contribution in this.

Sustainability of the datateam method in school B

The original team was not active anymore. However, a new team had been formed, consisting of some of the original team members, and some new members. The new data team did not use the eight step procedure as much as the datateam method prescribes. The team did however, try to solve educational problems based upon data. In the school plan, the end of the data team in its current form

was announced. After this, a similar group would be formed, which researches educational problems by doing data-research, but without the name ‘data team’. The school leader stated: ‘After a year we are going to decide whether we keep calling it like this, or that it becomes an educational team [...] eventually, if often leads to educational things, didactics, or things about the teacher, but often educational things’.

Factors influencing the sustainability in school B

A culture of data use in school B
One of the school leaders had been using data for years, by looking critically at them and using data to reflect on practice. This was independent of the datateam method. One of the teachers stated: ‘He has been working with data for years. Also without the data team he would have done this’. In the team, every member looked critically at data, and members were open to data. Outside of the data team, this openness to data and to other teachers’ opinions was mostly not present. One of the respondents stated: ‘We are not really a school where people easily criticize each other [...] there are too many at this school that do not want to be spoken to, that are more on their own island’. The use of data by individual teachers was neither stimulated in recent years, nor practiced. Slowly, this was starting to change. Data just recently became part of job evaluations.

A vision on the datateam method in school B
One respondent felt that one of the school leaders in the data team had a really clear point of view of where to go with the data team. The teachers in the team and the school leaders had a shared vision on the datateam method, as both groups saw the value it had for the school. In the school plan, it was included that analyses of results were expected to be discussed in sections and with the school leader. Based on these analyses, sections were expected to create points of improvement. Also, goals with regard to the results were to be formulated.

A culture of collaboration in school B
One of the team members informed other teachers in the school about the data team on study days, twice a year. One respondent stated that everyone in the school knew the data team: ‘Everybody knows the data team, everybody knows who is in the data team and who to address when you have something’. The school leader, however, believed that the communication with the rest of the school should have been better.

Most of the teachers outside of the data team did not discuss their practice with other teachers, let alone the use of data. One respondent also thought that a part of the teachers would not be willing to participate when input of teachers were to be needed for the data team. This respondent stated: ‘I expect that there is a connection with age. `The older the teacher, the less willing to participate’. It was rather new in the school that school leaders discussed results with sections. Discussions within sections were supposed to be the next step, but this did not happen yet in every section. The school plan did not include any components about the collaboration between teachers.

The development of teacher-leaders in school B
One of the teachers had some additional tasks, for example creating the agenda, and informing other teachers about the data team. Also, when a scheduled meeting was cancelled, this teacher tried to plan the meeting at another moment. The school leader also stated that this teacher had to take the initiative for data team meetings: ‘I think it is good that a teacher does this, and that it is not dependent of a school leader’.

Shared decision making in school B
Everyone in the team was equal. One could openly say what was on one’s mind. One of the respondents said: ‘Although I have not been working here for too long, I do dare to say; this is not right or that is not right. To be honest, I really value that’. Every opinion was valued in the team and decisions were made together. Every team member thought of recommendations based upon the results individually. Then, these individual recommendations were combined. The new members of the team were selected and approached after a discussion between the remaining original team members. Thus, these decisions were made collaboratively.

Active involvement by school leaders in the datateam method in school B
Two school leaders were involved in the data team. These were virtually always present. Their contribution to the team differed however. One of the school leaders was actively involved in the

process of the data team, as indicated by one of the teachers: ‘He contributed to the team’s discussions [...] and had an added value’. The other school leader however, contributes less to the team than most of the teachers and had a ‘low added value’.

The principal was not present at the data team meetings. The data team members did not want this, as the presence of the principal would have hindered their contribution to the team. One of the respondents stated: When he is present, others are much more cautious about what they do and do not say in the team’. The principal was kept up to date though, by the two involved school leaders.

Influencing self-efficacy of teachers in school B
There were no indications of feedback on the use of data by the school leader. The school leader did use data in discussions with teachers to support conclusions about the functioning of teachers. This could be seen as role modelling. The school leader used verbal persuasion to convince teachers to keep participating in the data team when these teachers had doubts. The school leader said: ‘Sometimes I chose to have a talk with someone to discuss what was going on [...] when someone was uncomfortable with the discussions about the data analysis, as that person did not understand it [...] and after that it worked again’.

Facilitation in school B
Teachers in the data team were financially compensated for their participation. Meetings of the data team were planned for the whole school year. The school leader was also able to make sure that all the team members’ schedules were cleared in order to be able to meet.

Professional development in school B
The external trainer was no longer needed. However, the school leader emphasized: ‘It might be helpful if the trainer came by at some point to prevent that a certain structure of the method becomes lost [...] as we let the eight-step procedure for what it was. We do it, but it is not explicitly mentioned every time’. When the team would have decided that it is necessary to work more strictly according the eight-step procedure though, the role of an external trainer might be needed.

The respondents felt that they possessed the necessary skills to collect, interpret, analyze and use data to improve practice. Therefore, additional supportive courses were not needed.

Team collaboration in school B
Team members did learn from each other. One for example, was better at analyzing data, while another was better at formulating questions for a survey. New members were not guided in the method. They read the eight step procedure for themselves and were supposed to think along with the rest of the team members. There was no special guidance, new members had to learn from the other team members.

4.1.3 Results school C

Context school C
This school addressed the transfer between the fourth, fifth and sixth year of vwo (pre-university education), as well as the possible continuation of students at the lower level of havo (senior general secondary education). This school only offered upper secondary education in havo and vwo. The goal was to prevent student transfers to a lower educational level, i.e. to have students at the right ‘place’ when they start in the fourth year of either havo or vwo.

Implications for practice in school C

With regard to the skills in collecting, analyzing, interpreting and using data, the datateam method was not effective in this school. Although the datateam method did contribute to the fact that its members developed a more critical view of what was going on in the school, the team members indicated to be lacking the aforementioned skills. One of the respondents indicated to be ‘less enthusiastic’ about working with data as a consequence of working in a data team, possibly because: ‘I feel the need to translate it to my own daily practice, but this was not possible for me’. This respondent also indicated to have enjoyed excluding gut feelings of teachers. However, after a while the data team started focusing on motivation as the possible cause of the problem, and this was ‘too vague’ for her.

The data team did not contribute to a reduction of the educational problem yet. The data team did organize an afternoon with all the other teachers. In this, ideas were exchanged about how to motivate students. The results of this afternoon were collected and combined into a reader. One of the

respondents indicated however: ‘The results of that afternoon were somewhat poorly drawn up. I think that it is a shared feeling in the team. [...] Personally I think it is neither fish nor fowl’. The data team did tackle some gut feelings regarding the topic of research. The school leader indicated that the use of data had led to a lot of worthy discussions.

Implications for policy in school C

In the school plan, the data team was mentioned. The procedure of working, as well as the value and the topic of the data team were mentioned. Furthermore, the data team was mentioned as a component of stimulating collaboration between teachers and, as a result of collaboration, the improvement of teaching.

The school leader revealed that the school used more data than ever, but did not attribute this to the datateam method: ‘I rather think that the arrival of a data expert was important in this’. The school leader valued the collaborative discussions about education rather than the use of data in the team to solve an educational problem.

Sustainability of the datateam method in school C

The original data team was still active within the school. However, the eight step procedure was not used anymore. The school leader stated that data were no longer to be used in the data team. In the forthcoming years the data team will not start researching a new topic, instead the team will discuss educational topics within the school rather than researching them. Thus, the school leader really valued the collaborative discussions about the school’s practice and wanted to continue with this rather than using data collaboratively to solve an educational problem. The school leader stated: ‘When I need data, I ask the data expert for it. Why would I put a data team on that? [...] We research things in sections or in the school board. Everybody is aware that there is much more data than before and we eagerly use them. It is not a specific data team thing’. Thus, data were being used in the school. Therefore, the school leader did not think it was necessary to have a data team in the school. One of the teachers indicated that the use of data was rather normal, independent of the datateam method: ‘Although the method maybe to some extent sharpened our awareness of it’. As the datateam method is no longer being used in this school, and the method did not seem to have contributed to more or better use of data in the school, this school did not ‘sustain’ the datateam method.

Factors influencing the sustainability in school C

A culture of data use in school C
The data expert stated: ‘That school is pretty used to working with data’. The school leaders in the data team critically looked at data. Teachers were open to data and had a critical view. One respondent stated that teachers already used data in their daily practice, and that it was not a result of the data team. Individual teachers used data in their classrooms to reflect on their practice. One of the respondents stated: ‘It is a requirement to get your lessons on a certain level, to evaluate what you did’. The use of data was always part of the conversations between teachers and school leaders.

A vision on the use of data in school C
All data team members really wanted to improve the school. The datateam method was not part of the school’s policy though. The school leader saw the team as an opportunity to discuss education collaboratively. Researching an educational problem with the help of data was not considered necessary. The school leader used data in evaluations with sections and individual teachers. Teachers thought of this process as positive. The vision included the use of data to learn from each other and to improve the quality of the school. The school plan stated: ‘Made errors and evaluations are always aimed at improvement’.

A culture of collaboration in school C
At one point, the data team and other teachers and school leaders in the school discussed collaboratively the topic of the data team. Furthermore, the school leaders discussed the data team proceedings in the school and other team members discussed it in their sections. Also, there was some sort of magazine for teachers, which from time to time included some information about the data team. However, not everyone in the school knew the data team. Collaboration between teachers in sections was rather normal in the school. The use of data was discussed between teachers. Also, when the data team needed input from colleagues, this caused no problems. School leaders did not

decide for sections what they should do, this always happened in discussions. Collaboration between teachers was stimulated, as one of the respondents indicated: 'There are a lot of initiatives to collaborate [...] for example, opportunities to observe each other'. Learning from each other, for example, was an important component of the school plan. The school plan, among other things, stated: 'We stimulate teachers to have discussions about what leads to greater student achievement. It is important that one can learn to and from another [...] through peer review, visiting and discussing each other's lessons based upon clear criteria, and participation in lesson study and data teams'.

The development of teacher-leaders in school C
There were no teacher-leaders developed for the method. The school leader that initiated the meetings, was absent during three months. In this period, no one took the initiative of arranging a meeting and the team virtually was not active during that period.

Shared decision making in school C
All members of the team were seen as equal. The data expert stated: 'If you had attended one of our meetings, I do not think you would have distinguished school leader and teacher'. Points from every team member were valued. Teachers in the data team felt they had influence on the process and that they were important. The respondents emphasized the 'flat' organization of the school, in which the school board is very open to initiatives of teachers.

Active involvement by school leaders in the datateam method in school C
There were two school leaders involved in the data team. One of these school leaders initiated meetings and controlled the process of the team. This school leader was also responsible for the communication with other school leaders and teachers in the school about the data team proceedings. The other school leader only participated in the team.

The principal in the school was not present at meetings, but was informed about the data team proceedings. One of the teachers stated: 'He was present at that afternoon with all the colleagues to hear about our progress. He is just an interested person'.

Influencing self-efficacy of teachers in school C
Feedback on the use of data was mainly given by the data expert, although to some extent also by school leaders. One of the respondents stated: 'Especially with the analysis we struggled sometimes [...] and they were of course strong in that, they had an important share in that'. Another respondent mentioned that the school leaders, besides giving feedback, also received feedback from the data expert. Data were used by the school leader in supporting conclusions in discussions with teachers. This is a way of role modelling. Verbal persuasion was used to convince teachers in the school of the importance of data. The school leader stated: 'You just keep talking. Eventually, they just cannot deny it'. However, there were no indications of verbal persuasion with regard to the datateam method.

Facilitation in school C
Data team members did not get compensated, financially or in time, for their participation. Meetings were planned for the whole school year. After external support ended however, meetings were planned one or two at a time. Initially, schedules of teachers were cleared in order to be able to meet with the whole team. Later on, this became impossible due to a lack of time. However, if the team indicated that a free afternoon was needed to catch up on the work, schedules were indeed cleared. This happened two times. The school leader tried to pick a moment were everyone was available, as this school leader had access to everyone's schedules.

Professional development in school C
There was no need for an external trainer after the two years of training. When the team would have worked with the eight-step procedure though, this external trainer would have been essential. One of the respondents indicated: 'If we, or the school, think it is important to research something based upon this method, I fear that we are not good enough to do that by ourselves'.

Teachers in the team appeared to be lacking skills in collecting, analyzing and interpreting data. The data expert had a big role in collecting and analyzing data. One respondent stated: 'We were very lucky to have that data expert, since she is really good at that'. The data expert stated about these skills: 'It is not their daily practice, so what expectations of teachers are reasonable?'

Team collaboration in school C
When a team member did not agree with something, this would be discussed. The data expert stated: 'Sometimes they were more like a critical talking group'. The datateam method aims at training skills in collecting, analyzing, interpreting and using data. In this team, the data expert had a big part in collecting and analyzing data, while at the same time the data expert stated: 'if one does not apply the learned skill frequently, it has no chance of surviving'. Team members were to some extent able to learn from the data expert, but apparently this was insufficient.

During the years, no new team members joined. If a new member was to be joining the team however, no guidance would have been needed. The school leader stated: 'We no longer use the eight-step procedure, so I do not think that guidance is necessary'. As data were no longer used in the team, skills in collecting, analyzing, interpreting and using data could not be gathered through informal learning.

4.1.4 Results school D

Context school D
School D focused on central examination results in havo. The percentage of graduating students had dropped in the last couple of years. The data team wanted to uncover why this was happening, with the ultimate goal of improving the percentage of graduating students.

Implications for practice in school D

With regard to the skills in collecting, analyzing, interpreting and using data, the team members were to some extent able to acquire these. Especially when it came to analyzing data, teachers lacked skills. In this, the data expert was important. One of the respondents did not take the course in analyzing data, as it was too far away: 'I had planned to learn that from other team members at some time, but this did not happen yet'.

The data team was discontinued after two years of external support. In these two years, a solution or reduction of the educational problem was not achieved. The data team contributed in rejecting some gut feelings, for example the feeling that students coming from the pre-vocational education track performed worse than 'regular' students. However, there were no indications of conversations about educational problems being more based upon data instead of gut feelings.

Although the data team was discontinued after two years, it did contribute to the fact that all teachers in the school received professional development courses in teaching and differentiating. In the upcoming school year, teachers are offered a course in analyzing their own results. The school leader stated: 'We have started developing all teachers, because apparently the way they teach is not as good as some teachers think [...] those are changes that were applied, to some extent, as a consequence of the datateam method'. The datateam method also contributed to the fact that school leaders systematically use data in their work. The school leader stated: 'I started to look more careful. I think that this is the cause, but I want to be sure that it is. [...] teachers are shown an analysis of their own results and we discuss these with them'. Also, structural meetings with sections were reintroduced. These were planned three or four times a year, with the goal of evaluating the results and improving them: 'We want to know, and see on paper, what they are going to do in order to improve'.

Implications for policy in school D

One of the teachers stated that the datateam method did not have implications for policy: 'It stayed on an island'. According to the school leader, the data team was included in the school plan during the years it was active.

The school leader stated that the datateam method contributed to a change in the school plan, as the use of data was included after the data team stopped. The Inspectorate evaluated this school and confirmed that data were 'insufficiently' used. This happened after the data team was discontinued. Therefore, the school board is currently focusing on how to improve this, for example by determining minimal requirements of student data collecting.

Sustainability of the datateam method in school D

The data team was no longer active in this school. The school had to cut expenses and the data team was not important enough to keep facilitating it.

Factors influencing the sustainability in school D

A culture of data use in school D
A lot of the teachers in the school, including data team members, appeared to have an external locus of control. The school leader stated: 'Colleagues did not want to look in the mirror. Could I be the reason of the problem? And that is an important component of such a method'. Also, teachers were not used to working with data. Thus, looking critically at data and reflecting on one's practice based upon data did not occur. One of the respondents stated: 'It is now mandatory, in central examinations, to request a group report from the CITO and send it to the school board. [...] that is a way to compare yourself with teachers at other locations. That is possible, but people do not really use those possibilities. If one has structural lower results than one's colleagues, I guess it will attract attention at some point'. This indicates that the use of data to improve one's practice, was not yet a very lively topic in this school.

A vision on the use of data in school D
There was no vision on the use of data. It is only since recently, that school leaders started discussing an analysis of one's results with the concerning teacher. When these results were insufficient, this resulted in certain points of improvement. The school leader stated about the use of data in these conversations: 'Teachers are somewhat surprised. They are totally not used to looking like that'. However, this was after the data team was discontinued. One of the respondents indicated: 'I actually do not know why the team was discontinued [...] it just did not happen. [...] I think it is a real pity'. This may indicate that school leaders and teachers did not have a shared vision of the datateam method, as the school leader stated: 'The data team was not unimportant, but not the most important'.

A culture of collaboration in school D
Three times a year, at meetings with all teachers, one of the teachers told about the data team and what was being researched. The school leader stated: 'I was responsible for creating time at such meetings for one of the team members to inform everyone about the data team'. Also, information about the school which all teachers received through e-mail, contained some information about the data team as well. However, this happened two times a year. The respondents thought this could have been better. One of the teachers stated: 'There was virtually no response to what we were doing'. Teachers were used to being on their own 'island'. There were no structural meetings with sections and data were neither used nor discussed in the time of the data team.

The development of teacher-leaders in school D
There was one teacher who encouraged team members and took initiatives. This teacher also communicated with the teachers in the school about the data team. The school leader stated: 'There was one colleague who got that job, and around him, a data team was formed'.

Shared decision making in school D
The school leader stated that data team members did not have any more influence on possible implications of the method than other teachers in the school. At best, these members knew earlier what was going to happen. In the team, the school leader inspired people and divided the tasks. Concrete tasks were executed by the teachers in the team. The school leader stated: 'The teacher-leader was responsible for the research process and the other two colleagues were the research staff at that moment'.

Active involvement by school leaders in the datateam method in school D
The school leader was not always present at the meetings. This school leader stated: 'I literally sat there to listen, to see, and to be curious about their results'. Thus, the school leader did not take part in the eight-step procedure, but was involved in the data team. He stated: 'I just do not have the time and it is not my job to do more than just be present and listen'. One of the team members stated: 'When we started the data team, they said we needed a school leader in the team. I do not know why that is a prerequisite'. The principal's involvement was limited to getting informed about the data team.

Influencing self-efficacy of teachers in school D
Feedback on the use of data only came from the external trainer. This may be a logical consequence of the limited involvement of the school leader in the team. There were no indications of feedback giving, role modelling or verbal persuasion by the school leader.

Facilitation in school D
Teachers were compensated in time for their participation in the team. Meetings were planned ahead for the whole school year. However, this was a prerequisite for the external trainer. As the team was discontinued after the external support ended, it is not sure what would have happened when the data team had continued. Schedules of teachers were not cleared for the meetings.

Professional development in school D
If the data team were to be restarted, an external trainer would be essential. However, the fact that the external trainer left after two years, did not contribute to the data team being discontinued. When the data team had continued, additional support would have been needed too. One of the respondents stated: 'To start all over again, that is going to be difficult'. The school leader stated: 'When you do not frequently apply the method, it vanishes really quickly'.

Two of the three teachers in the data team were going towards their retirement. Therefore, the school leader questioned the usefulness of the courses these teachers took related to the datateam method. The data expert stated that the school leader did possess the necessary skills for participating in a data team, but that these were not needed in the function that the school leader had. For the teachers, this data expert stated: 'Teachers are busy enough with students and class preparations. When someone from the UT or I myself can do that, they should not be working with hard analyses or something'. A teacher stated that, with the data team being discontinued, and two colleagues going towards retirement, a lot of valuable expertise is going down the drain.

Team collaboration in school D
Especially when it came to interpreting data, team members were able to learn from each other. For the data analysis, the data expert was needed. One of the teachers stated: 'I understand it, but I just cannot do it'. The teachers in the team were able to help each other in their tasks. One of the respondents stated: 'Things like composing a survey and formulating questions, we all did that together'. There were no new team members that joined the team.

4.1.5 Results school E

Context school E
School E focused on student transfer from the third year of havo(senior general secondary education) to the fourth year of havo. Also, a number of these students seemed to continue at vmbo-level (pre-vocational secondary education) after failing the fourth or fifth year of havo. The ultimate goal of the team was to realize that students were at the right level of education in the fourth year.

Implications for practice in school E

With regard to acquiring skills in collecting, analyzing, interpreting and using data, the respondents indicated that these were present in the team. The data team members valued the method and wanted to spread it out through the school. However, problems with the size of the team and with the collection of some data prevented this (see 'Professional development in school E'). One of the respondents stated: 'We absolutely see the value of it, but it is difficult. I expect though, that we will continue, and that we will get some new people for the team'.

With regard to either solving or reducing the educational problem, nothing had happened yet. With obstacles as team size and time, the team worked at a reduced speed and did not yield results yet. The school leader stated: 'Just two weeks ago, I received new reports from the data team, but I did not even have the time yet to have a look at them'. The data team was able to reject some gut feelings about the problem, for example that more grade repetition occurred in the fourth year of havo, while the data team found that this occurred more in the third year of havo. There were no indications of more conversations about educational problems being more based upon data instead of gut feeling though.

School leaders outside of the data team did acknowledge the method. The school had started restructuring, to make sure that the one person who was skilled in collecting data, had more time to do this. The school leader stated: 'In the school board, I am the only one who is really involved in it. They do see the value, but everyone is just so busy with other stuff'.

Implications for policy in school E

The datateam method was not included in the school plan. However, there was a focus on basing assumptions on data and formulating goals based upon data. Also, the evaluation of these goals based upon data was included. The school plan also included that the use of data was consistent and systematic, and executed in teams. The data team could be categorized under this element. There were no indications for implications on policy. In fact, there were no resources available to compensate team members, which led to the difficulty of having a data team with only three team members.

Sustainability of the datateam method in school E

The original data team was still active. However, the number of people involved in the team had been reduced from nine to three. No new team members joined the team, as there was no money available to compensate them. Due to problems with the size of the team and the collection of data, the process of the team was slowed down. So far, the data team has been continued though.

Factors influencing the sustainability in school E

A culture of data use in school E
The school leader stated: 'I have always been working towards goals […] and it goes without saying that the use of data is needed in this'. The datateam method did not contribute to this for the school leader personally. The teachers in the team were already convinced of the value of data. However, a lot of the colleagues still needed to be convinced of this. One of the teachers stated: 'That is not really something of which people speak. If you were to ask teachers about it, I do not think you would come far'. The use of data was not a lively topic among teachers in this school, although to some extent results were discussed. The school plan stated that in the last four years a begin was made in expanding a system for collecting and using data. This becoming more standard in the organization was one of the main topics of interest for the school board. The datateam method also started in this period.

A vision on the use of data in school E
The datateam method was not in the vision or the policy of the school. The teachers and the involved school leader were convinced of the value of the datateam method. The other school leaders however, did see the importance, but it was not important enough to keep compensating teachers. The school plan included the use of data in sections and clear goals and a focus on improvements based upon data. Sections were supposed to formulate goals based upon an evaluation and the results of the last two years.

A culture of collaboration in school E
Teachers in the school were informed about the data team through the weekly magazine of the school, which was distributed by e-mail. One respondent stated: 'We did this regularly, but we had little response to this'.

Results were to some extent discussed in sections. One of the teachers stated: 'Of course we try to exchange information [...] We have collegial visits, sections meetings [...] However, everyone has their own point of view when it comes to data'. Collaboration between teachers was not specifically mentioned in the school plan.

The development of teacher-leaders in school E
There was a teacher-leader who, at the beginning and together with the school leader, did the formation of the team. This teacher-leader was also responsible for initiating meetings. The school leader pointed out that this teacher-leader executed these tasks insufficiently: 'I had to keep pressure on him, while we agreed that he would monitor the process'. Another task of the teacher-leader was to inform colleagues in the school about the data team. This did not happen either. The school leader

stated: ‘Maybe he had a different idea about this, or maybe the expectations were not clear, but it should have happened’.

Shared decision making in school E
Every team member had their input in the team. Every member was equal and team members complemented each other. One of the respondents stated: ‘Everyone had a totally different way of sharing their point of view, but it is really nice to see that we complemented each other. [...] The atmosphere in the group was really good’.

Active involvement by school leaders in the datateam method in school E
The school leader was virtually always present and actively involved in the meetings. One of the teachers stated: ‘The school leader just participated as a member of the team, although the school leader did have a better overview of what was realizable within the school board’. The principal was not present at meetings, but the involved school leader informed the principal about the process.

Influencing self-efficacy of teachers in school E
Verbal persuasion was conducted by the teacher-leader to convince teachers to participate in the data team. This teacher-leader stated: ‘They all know what causes the problem. But none of them has ever researched it. [...] so I said’: ‘’those feelings that you have, maybe they are right, and maybe they are wrong. Lets investigate them’’. There were no indications of feedback giving, role modelling or verbal persuasion by the school leader.

Facilitation in school E
Some team members got compensated in time for their participation, depending on the salary scale and time spent on tasks in the team. Some teachers also thought that the compensation was not enough and therefore did not participate. Last year, there was no compensation possible for new team members. Meetings were planned ahead for the whole school year. After external support ended however, meetings were planned one at a time. Schedules of teachers were not cleared in order to be able to attend team meetings, although this was possible when really necessary.

Professional development in school E
The data team in this school agreed on some additional external support, in the form of one or two additional days with the external trainer. The school leader stated: ‘We never heard anything from her. So it did not happen and I think that is a pity. At some point you just need that external input […] I really think that it is necessary’. One respondent believed that when the team had remained the same, external support would not have been necessary. In the current formation however, external support would be very helpful.

For the collection of some data, the team depended on one person who was skilled in it. However, this person often lacked time to help the team right away. Therefore, the process got slowed down. For data analysis, the team relied on one of its members. This also made that this process of analysis took more time. The school leader stated: ‘It should be a sort of automatic process, the method, but we are absolutely not there yet in our school’. She also admitted that she definitely did not possess the skills to analyze data. In general however, the team members believed that time was a bigger issue than their skills in the use of data.

Team collaboration in school E
The analysis of data was conducted by one team member individually. The remaining two members were not involved in this process and therefore did not learn anything about it. In an earlier stage, when the team was bigger, the analysis was conducted by two persons. However, the remaining members still did not learn from them. The interpretation of data was conducted collaboratively. Therefore, informal learning did occur for this aspect of the data team. There were no new team members that joined the data team.

4.1.6 Results school F

Context school F
The data team in school F focused on the differences between school examination results and central examination results in English. Before this, a few other hypotheses were already rejected, such as the effect of being behind in reading on the examination results.

Implications for practice in school F

With regard to the acquisition of aforementioned skills in collecting, analyzing, interpreting and using data, the datateam method was effective in this school. One possible exception may be the collection of data, which was mostly conducted by the data expert in the data team. However, the school had responded to this by buying software which makes the collection of data easier for teachers. The data team members learned to handle data in a new manner. However, one respondent stated: 'You need to practice it, if you do not do that, it slips away. Therefore it is a shame that it is not happening now'. The school leader stated: 'Actually we learned rather than that we had results […] we want to proceed with this learning and spread it under our colleagues'.

The educational problem that was addressed by the data team, resulted in a few recommendations for the section English. The school leader stated: 'Of course this led to some adjustments in that section, but there were no real results deriving from our research. What I said earlier, it was much more a schooling for us. We did not really focus on what should have been the result'. Thus, the fact that the school leader emphasized that she approached the method as a form of professional development for teachers, may have contributed to the fact that the educational problem was, in reality, neither reduced nor solved.

The datateam method contributed to the fact that the school leader started using data in discussions with teachers. It also caused the school leader to be more aware of the usefulness of data in general. The school leader claimed to be a person of 'gut feelings'. The datateam method completely changed this. The school leader stated: 'Well, it has just put my two feet back on the ground'. Gut feelings were rejected by the data team procedure, for example the idea that students with another nationality than the Dutch nationality, caused lower results.

Implications for policy in school F

The datateam method was never part of the school plan. In the school plan, professional development is an important element though. In this school, the datateam method was mainly seen as a form of professional development. Also, collecting and using data was mentioned, however mainly as a function of the management. These data were used to investigate whether teachers were open to learn from each other, and whether they developed their didactical skills. Use of data among teachers was not emphasized, except for the use of student data to be able to differentiate.

Sustainability of the datateam method in school F

After two years of external training, the data team stopped. Some of the team members, including the involved school leader, decided to create room in the team for other colleagues. The school leader approached the method as a way of schooling and decided it was time to spread the learned skills over the rest of the school by replacing part of the team. However, the data team did not become active again. Reasons for this may be a lack of time and facilitation. There were still plans though to proceed with the data team.

Factors influencing the sustainability in school F

A culture of data use in school F
Expectations in the use of data was not something that was typical for this school. The school leader stated: 'Because of the datateam method, I learned to be much more objective. I remember I caused some laughs at the moment I started being more critical in the meetings with the other school leaders'. The data expert stated that teachers did reflect upon data, but lacked the skills to improve their practice upon data. Another respondent pointed out that teachers tried to use data in their classroom, and that the datateam method made this somewhat easier. This respondent stated: 'We try to look critically at our curriculum, and to do adjustments when this is needed'.

A vision on the use of data in school F
The members of the data team all agreed that the method was valuable. The involved school leader decided to pass over the 'involvement' to a colleague, to create more support for it among school leaders. The team members had a similar view of the method. They wanted to spread their expertise through the school. This school leader stated about the current inactivity of the team: 'It is a matter of how important it is to you'. The school leader who took over, may not have valued the datateam method to the same extent as the other school leader did. Another respondent stated: 'The new

school leader did not take the initiative to start up the team again. […] Apparently the managers did not think the data team was important enough, I cannot think of another reason'. The school plan included the collection of data, but no clear goals were formulated for teachers in the use of data. Learning and improving based upon data were missing as well.

A culture of collaboration in school F

The data team tried to communicate with colleagues in the school by talking about it and by publishing in the school's magazine. The data team however, was not really known in the school. One respondent stated: 'We did not communicate a lot with the rest of the colleagues. I think that could have gone better and that it was a point of concern for the first data team'.

In recent years, the school started to analyze and discuss results with sections. Within sections, results were discussed. The school plan did not mention the collaboration between teachers or sections. In the vision it was stated: 'Within the school staff it is about learning from each other, and this requires being open to this'. Furthermore, the collaboration between teachers was not included.

The development of teacher-leaders in school F

There were no teacher-leaders involved in the datateam method. The school leader organized the team meetings and monitored the process of the team. However, the school leader did got hold of the idea that it should not be dependent of her. Therefore, this school leader decided to pass over the task to another school leader. The school leader stated: 'It should be further supported within the school board. Therefore, I wanted another school leader to be involved'. The remaining original team members wanted to see the data team being continued, although they did not feel the need to take initiatives in this. One of the teachers stated: 'I do not see it as one of my tasks, it is a task of the school leader and I was told that he would do it, but so far I did not receive an invitation yet'.

Shared decision making in school F

The school leader clearly had a different role than the teachers in the team. Initiatives came from the school leader and teachers were more executers. The data expert stated: 'The school leader clearly had a different role in the team meetings [...] and teachers were somewhat more awaiting'. Team members, however, felt that everyone was equal in the team. One of the teachers stated: 'She acted as a participant, we were able to communicate about several topics on an equal level'. The remaining original team members did not have influence on the selection of new team members though.

Active involvement by school leaders in the datateam method in school F

The school leader involved in the data team was virtually always present at meetings. The school leader monitored the process and let the teachers execute the concrete tasks. The school leader stated: 'I was somewhat withholding, as I thought the teachers should learn to interpret and use data'.

The principal was not directly involved in the data team, but was informed about the process and took some responsibility in convincing teachers to become data team members by offering a compensation in time for it.

Influencing self-efficacy of teachers in school F

Feedback on the use of data came from the external trainer and the data expert. The school leader did not give feedback in the use of data. The datateam method contributed to the fact that the school leader started using data as evidence in job evaluations with colleagues. This is a form of role modelling. However, as the datateam method contributed to this, the modelling of data did not happen for a period *during* the time the data team was active. At first, some teachers needed to be convinced to spend time on the datateam method. This happened through verbal persuasion of the school leader.

Facilitation in school F

At first, the school did not want to compensate the data team members for their participation. This led to some teachers refusing to participate. Eventually, some team members did get compensated in time for their participation, dependent of the salary scale of teachers. Meetings of the team were planned for the whole year. After external support ended, in the new formation, one meeting took place. Afterwards, no more meetings were planned. Clearing schedules of teachers was not needed, as the school had a regular afternoon without lessons. This afternoon got filled with various meetings, including the data team meetings (usually one meeting every three to four weeks).

Professional development in school F
Additional external support had been offered to this school. However, the data team was not active anymore. The school leader believed that the original data team could have stayed active without the additional external support. One of the teachers also stated that the external support would not have been necessary.

The data expert played an important role in collecting data. Therefore, team members were less able to master these skills. However, the school purchased software that reduces the time spent in collecting data and also reduces the requirement of the involvement of a data expert, as this software makes it easier for teachers to collect data. With regard to the other skills, team members did not need any additional courses. One respondent stated: 'The people who already took the courses could have taught it to the new members'.

Team collaboration in school F
The school leader emphasized to necessity of rotation of the tasks. Team members need to learn collecting, analyzing, interpreting and using data. A strict division of tasks may hinder this process. The teachers in the team discussed the various tasks, supported and stimulated each other, and therefore were also able to learn from each other. One exception here was the collection of data. This was experienced as a process that took a lot of time and required the expertise of the data expert. The data expert also supported the team in the analysis of data, but every team member looked at it and the results were always discussed.

The remaining original team members were supposed to make the new members, who were already selected, familiar with the datateam method, and informal learning was supposed to take place. The original team members would have taken the lead in the team.

4.2 Cross-case analyses

The results of the within case analyses were compared and contrasted to each other. First, the implications for practice and policy are described. Thereafter, the sustainability of the datateam method is discussed. Finally, the factors that have an influence on this sustainability are discussed.

The implications for practice and policy

Table 3 shows that the extent to which the datateam method had implications for practice and policy varied between the schools. Implications for the skills of teachers in collecting, analyzing, interpreting and using data, were present in nearly all schools. In school C, teachers lacked these skills. The data expert involved in the team did a lot of the work in collecting and analyzing data, which may be a reason for this. In schools D and F, the data expert mainly supported teachers in respectively data analysis and data collection. Therefore, skills were somewhat less acquired at these areas. However, in general the aforementioned skills were acquired. In schools A, B and E, the acquisition of skills was effective, as respondents indicated to have acquired the aforementioned skills and that additional professional development was no longer necessary.

With regard to the educational problems that were addressed in the several data teams, only two out of the six schools managed to reduce their problem. These were schools A and B. In these schools, respondents indicated to have implemented some measures, which led to a reduction of the educational problem. School E did not finish the research yet. School D, also did not finish the research, but this data team was discontinued. In schools C and F, the data team came up with some results, but these did not lead to a reduction of the educational problem. The school leader in school C valued the collaborative discussion of educational topics rather than solving the problem. The school leader in school F valued the development of skills rather than solving the educational problem.

Another possible implication of the method was a shift in discussions from being 'gut feeling' based towards data-based. In all schools, with the exception of school B, respondents indicated to have rejected a lot of gut feelings. However, only in schools A and C there were indications of *more* conversations about educational problems being based upon data instead of gut feeling.

An additional implication is one of offering additional courses in how to analyze one's results. In school D the datateam method was discontinued due to budget cuts. However, the method contributed to the awareness of the school board. This resulted in offering the aforementioned courses to *all* teachers in the forthcoming year.

With regard to implications for policy, four of the schools indicated to have included the method in the school plan. Schools B and C did this extensively, including the activities and the goals of the data team. School C however, also included the data team as a way to stimulate collaboration in

the school. In school A, the data team was only shortly mentioned, without including activities and goals of the team. The school leader of school D claimed the inclusion of the datateam method in the school *during* the activity of team. Since the team was discontinued, the method was no longer included in the school plan. The method did contribute to a focus on data in the policy though. In school E, the datateam was not explicitly mentioned, although it could be deducted from other formulations. School F did not mention the datateam method and hardly mentioned the use of data in general.

Table 3 The implications of the datateam method for practice and policy

	School A	School B	School C	School D	School E	School F
Implications for practice	Improved skills among data team members Educational problem is reduced Discussions are more about data, less about gut feeling	Improved skills among data team members Educational problem is reduced, second topic in progress	Lack of skills among data team members Educational problem not yet reduced Discussions are more about data, less about gut feeling	To some extent improved skills among data team members Educational problem not reduced Additional courses in analyzing own results are offered to teachers	Improved skills among team members Educational problem not yet reduced	Improved skills among team members Educational problem not reduced
Implications for policy	Shortly mentioned in school plan	Extensively mentioned in the school plan	Extensively mentioned in the school plan, partly as a form of stimulating collaboration	Has been part of the school plan (unknown to what extent) More focus on data in policy	Not directly included in school plan	No implications for policy

The sustainability of the datateam method

Table 4 shows the sustainability of the data teams in the various schools. In school A, the original data team was, for the biggest part, still active. Although a few members stopped, only one new teacher joined the team. In school B, the data team consisted of eight members. Four of these were original team members, the other four joined the team after external support ended. Therefore, this could be seen as a 'new' team. In school E, the original team was still active, although its size was reduced from nine people to three. Thus, this data team still existed, but due to the size of the group and some problems with the collection of data, the team was not able to do a lot during the last school year. The team though, was still enthusiastic and wanted to proceed with the data team.

In schools C, D and F, the datateam method was not 'sustained'. This had various reasons. In school C, the team was still active, and its members were very enthusiastic about the collaboration. The school leader however, decided to stop working with data *in* this team. Therefore, this team could no longer be seen as a data team. Although data were actively used in the school, respondents indicated that the datateam method did not have a contribution in this. Therefore, the datateam method here was considered as 'not sustained'.

In school D, the school board decided to stop with the data team, because of financial reasons. The datateam method did increase awareness of the importance of data in the school board. However, the skills in collecting, analyzing, interpreting and using data were not spread through the school. The data team members indicated that their skills were quickly fading as they were not used any longer. Therefore, the datateam method was 'not sustained' in this school.

In school F, plans were made to continue the data team. However, this did not happen yet,

and the team had been inactive for at least one school year. Respondents pointed out a lack of time and importance among school leader(s) as the main reasons for this. The aim was to spread the learned skills through the school. As this had not happened yet, and with the team being 'inactive', the datateam method in this school was listed as 'not sustained'.

Table 4 The sustainability of the datateam method

	School A	School B	School C	School D	School E	School F
Sustainability of the datateam method	Original team still active	New team is active, consisting of original and new team members	Not sustained	Not sustained	Original team, in reduced form, still active	Not sustained

Factors influencing the sustainability of the datateam method

In this section, the various factors, as listed in the theoretical framework, were discussed with regard to the six schools. Table 5 provides an overview of these factors. In this table, schools that 'sustained' the method were sorted on the left, the schools that did not 'sustain' the method on the right. Thus, schools A, B and E had 'sustained' the datateam method, whereas schools C, D and F did not.

Table 5 Factors influencing the sustainability

	School A	School B	School E	School C	School D	School F
Culture of data use	Expectations of data use Looking critically at data Reflecting on data Openness for changing practice based upon data	No expectations of data use Limited looking critically and reflecting on data Limited openness for changing practice based upon data	No expectations of data use Looking critically at data Limited reflecting on data Limited openness for changing practice based upon data	Expectations of data use Looking critically at data Reflecting on data Openness for changing practice based upon data	No expectations of data use Limited looking critically and reflecting on data Limited openness for changing practice based upon data	No expectations on data use Looking critically at data Reflecting on data Openness for changing practice based upon data
Vision on the use of data	Teachers and school leaders value method Goals related to the use of data Focus on improving based upon data	Teachers and school leaders value method Goals related to the use of data Focus on improving based upon data	Teachers and involved school leader value method, other school leaders value it less Goals related to the use of data Focus on improving based upon data	Teachers and school leaders did not equally value the method Goals related to the use of data Focus on improving based upon data	Teachers and school leaders did not equally value the method No goals related to the use of data No focus on improving based upon data	Teachers and school leaders did not equally value the method No goals related to the use of data No focus on improving based upon data
Culture of collaboration	Teachers were well-informed about the data team Data are discussed in section meetings	Teachers were informed about the data team Data are to some extent discussed in section meetings	Teachers were poorly informed about the data team Data are to some extent discussed in section meetings	Teachers were well-informed about the data team Data are discussed in section meetings	Teachers were informed about the data team Data are not discussed in sections	Teachers were poorly informed about the data team Data are to some extent discussed in section meetings

Teacher-leaders	Multiple	One	One	None	One	None
Shared decision making	Decisions were made together Each member was equal	Decisions were made together Each member was equal	Decisions were made together Each member was equal	Decisions were made together Each member was equal	Decisions were not made together Members were not equal	Decisions were not made together Each member was equal
Active involvement by school leaders	Actively involved school leader Principal not present, but informed	Actively involved school leaders Principal not present, but informed	Actively involved school leader Principal not present, but informed	Actively involved school leaders Principal not present, but informed	No actively involved school leader Principal not present, but informed	Actively involved school leader Principal not present, but informed
Influence self-efficacy of teachers	Feedback Role modelling through using data to support conclusions Verbal persuasion (teachers outside of data team)	No feedback Role modelling through using data to support conclusions Verbal persuasion (teachers in data team)	No feedback No role modelling Verbal persuasion by teacher-leader (teachers in data team)	Feedback Role modelling by using data to support conclusions Verbal persuasion (teachers outside of data team)	No feedback No role modelling No verbal persuasion	No feedback No role modelling Verbal persuasion (teachers in data team)
Facilitation	Compensa-tion No planning of multiple meetings No clearing schedules for meetings	Compensa-tion Meetings planned for whole year Clearing schedules if needed	Some compensa-tion No planning of multiple meetings Clearing schedules if needed	No compensa-tion No planning of multiple meetings Clearing schedules if needed	Compensa-tion Meetings planned for whole year No clearing schedules for meetings	Some compensa-tion Meetings planned for whole year No clearing schedules for meetings
The need for ongoing professional development	External trainer needed in third year Teachers see the need for additional data analysis course, not provided by school leader	No external trainer needed No additional courses needed	External trainer needed in third year, but not provided No additional courses needed	External trainer needed *if* continued with the method Additional courses possibly needed *if* continued with method	External trainer needed *if* continued with the method Additional courses needed *if* continued with method	External trainer needed *if* continued with *new* team No additional courses needed
Informal learning on the job	Between team members New member learns from the team	Between team members New members learn from the team	To some extent No new team members	Insufficient No new team members	To some extent No new team members	Between team members No new team members

Culture of data use

In schools A and C, the use of data was rather 'normal'. The school leaders expected teachers to look at their results and data were used to improve practice. Teachers in these schools were open to reflecting on their practice and changing it when this was indicated by data. In school F, the staff was open to data and they tried to use data to reflect upon practice and improve it, but they seemed to be lacking the skills to do this. Also, no expectations were set for the use of data by the school board, which only recently started to analyze results of sections.

In schools B, D and E, there was also a lack of expectations in the use of data. In school B, the data team members were very open towards changing their practice based upon data and a critical view data was present. However, (a part of) teachers outside of the data team were not very open towards data and did not use data to reflect on their practice. The school board was trying to change this. For example, the use of data was just recently included in job evaluations. In school D, the use of data was somewhat of a new topic for the school board. Teachers in the school, in general did not use data yet and there was limited openness towards changing practice based upon data. The data team members did look critically at data though and tried to use data in their classroom. In school E, data team members were already convinced of the importance of data, and they looked critically at data. Although to some extent results were discussed in the school, the use of data was not a very lively topic. Teachers did have a very critical point of view though.

A vision on the use of data

In school A, the datateam method was an important component of the policy. Both school leaders and data team members valued the method, and there was a growing consensus among teachers in the school about the importance of the data team. In school B, teachers in the data team and school leaders also shared this vision on the datateam method. In both schools, the method was made important through facilitating the team. Both schools focused on improving the schools with the help of data and formulated goals in the use of data. School E was rather similar to the other two schools. However, the data team was less 'important' for the school leaders than it was in schools A and B. For example, both schools A and E had to cut expenses. While school A protected the datateam method from budget cuts, school E decided to stop facilitating the datateam method. Because of that reason, the data team in school E was reduced in size. As a consequence, the process of the team moved at a relatively slow speed.

School C, like the other schools, also formulated goals based upon data and focused on improving the school with the help of data. The datateam method however, was not 'sustained'. Both the school leaders and the teachers in the team valued the collaboration and the discussions in the team rather than the acquisition of skills to collect, analyze, interpret and use data or solving educational problems based upon data. In schools D and F, the team members were really enthusiastic about the datateam method and thought of it as rather important. This did not correspond with the vision of the school board though. Respondents in these schools indicated that the school board did not value the method as important enough to keep facilitating it. Also, both schools lacked the formulation of goals based upon data and a focus on improving based upon data.

Culture of collaboration

In schools A and C, the school staff was well-informed about the data team. In school A, teachers in the school agreed that the data team was important to the school. In both schools, teachers were actively involved as they were asked for input. Also, in school A the data team members talked a lot about the data team in, for example, their sections and the teachers' lounge. School C organized an afternoon at which all the staff discussed the topic of the data team. Also, in both schools it was rather normal that sections discussed results and the use of data. Collaboration between teachers was stimulated.

In schools E and F, results were discussed in sections. Teachers in the school were poorly informed though with regard to the data team. In schools B and D, the teachers in the schools were informed about the data team. Respondents however, indicated that this could have been better. In school B, it was strongly dependent of the section whether data were being discussed. In school D, this did not occur at all. In these four schools, collaboration between teachers was not a specific component of the school plan, whereas in schools A and C collaboration was considered very important.

The development of teacher-leaders in the datateam method

In school A, two teacher-leaders were developed in the method. One of these teachers already participated in the pilot of the datateam method, before becoming a member of the current data team. Therefore, this teacher was very experienced with regard to the method and became a sort of teacher-leader through this process. The other teacher-leader was more 'developed' by the school leader, as this was combined with some sort of schooling and the teacher-leader was given some formal tasks, for example initiating meetings with the team. In schools B, D and E, there were also teacher-leaders involved, one per school, as opposed to the schools C and F. In these schools, teacher-leaders were not involved in the data team.

Shared decision making
In schools A, B, C and E, the data team members experienced equality in the team. Although one or two school leaders participated in the team, teachers felt like they could communicate and work in a safe and open environment. School leaders were seen as equal and decisions were made together. These decisions differed from coming up with recommendations for the school board to selecting new members for the data team. In school F, teachers also experienced this equality in the team, although decisions were not made together. This data team did not came up with recommendations or measures, but when new team members had to be selected, teachers played less of a role than the school leader did. In school D, equality of the team members was less present. Also, the school leader indicated that the data team members had no more influence than other teachers in the school did.

Active involvement by the school leader(s)
With the exception of school D, all school leaders were actively involved in the data team. Although the role of the school leader differed, the school leaders were virtually always present at the team meetings. In schools A, B and E, the school leaders were team members, who were as much involved in the tasks as were the teachers. In schools C and F, the school leader initiated team meetings. These school leaders were more responsible for the process of the team than the concrete tasks. In school F, the school leader left the concrete tasks of the team for the teachers, as the teachers 'had to learn this'. In school D, the school leader was not actively involved. This school leader was sometimes present at meetings, but only to hear about the progress and the results. The principals in all these schools were never present at data team meetings, but were informed about the progress by the involved school leaders.

Influencing the self-efficacy of teachers
All the teams received feedback on the use of data by the external trainer. However, feedback from the school leader occurred less often. In schools A and C, the school leader did provide feedback on the use of data. In school C, the data expert also provided the team with feedback. As this data expert was also involved in the team at school F, feedback was also provided here. Feedback was not provided by the school leader though. In schools B, D and E, there were no indications of providing feedback by the school leader either.

Another way to enhance the self-efficacy of a teacher was by role modelling the use of data. In schools A, B and C, school leaders modelled the use of data by using them to support conclusions in discussions with teachers. In school F, the school leader started using data to support conclusions *as a result* of the datateam method. Therefore, it was expected that this role modelling did not have influence on the sustainability. In schools D and E, there was no role modelling.

In schools B, E and F, teachers needed to be convinced to take part in the data team or to stay in the data team. These teachers were convinced through verbal persuasion. However, whereas this verbal persuasion was conducted by the school leader in schools B and F, this verbal persuasion in school E was conducted by the teacher-leader. In school A, verbal persuasion was used by the school leader to convince teachers outside of the data team to provide the team with the needed input. The school leader in school C also used verbal persuasion, but this was used to convince teachers outside of the data team to start using more data. As this had nothing to do with the datateam method, this was not of importance for the sustainability of the method in this school. In school D, there were no indications of verbal persuasion by the school leader.

Facilitation
In schools A, B and D, teachers received some form of compensation, either financially or in time, for their participation. In schools E and F, this depended on the salary scale of the teachers. In school C, teachers did not receive a compensation.

During the period of external training, meetings were planned ahead for the whole school year. In schools A, C and E this changed after the external support, although various respondents emphasized the importance of planning meetings for the whole school year. School B continued to plan meetings for the whole year, although about a quarter of these meetings were cancelled, as a part of the team members could not make it. Schools D and F did not continue after the external support.

In schools A, D and F, teachers' schedules were not cleared for the data team meetings. In schools B, C and E, there were more possibilities for this. When the data team members in these schools did not have the time to attend meetings with the team, clearage of schedules was possible.

Ongoing professional development

Two of the data teams did not continue after the external support stopped. However, in these schools, this did not contribute to the discontinuation of the data team. In school E, the activity of the team was reduced due to the small size of the team (three members) and the problems with the collection of data. These reasons also made that external support would have been very welcome. In the original formation though, two years of external training would have been sufficient, according to the respondents. School B and school C also continued without external support after two years. The data team in school B started to work less according to the eight-step procedure, while the data team in school C stopped working according to that procedure at all. Respondents from both schools admitted that external support would have been necessary, when they would have wanted to strictly follow the instructions in the eight-step procedure. The data team in school A received additional external support in the third year. The school leader stated this was necessary to make sure the sequence of the method is followed.

In school A, teachers saw the necessity of additional courses in data analysis. For the school leader however, it was important that the expertise was present in the team rather than in each individual team member. In schools B, E and F, enough skills were acquired by the team members. In school E, the tasks were strongly divided, although the team members did not foresee any problems. In school C, a lot of the tasks were executed by the data expert. Respondents admitted to be lacking skills in collecting, analyzing and interpreting data. When the datateam method were to be continued, additional courses may be necessary. In school D, two out of the three teachers in the data team were heading towards retirement. The other team member indicated that the acquired skills fade away very quickly as they were not being used. When the data team were to be continued in this school, additional courses may be necessary.

Team collaboration (informal learning on the job)

In schools A, B and F, teachers were able to learn from each other. In schools A and B, tasks were more or less divided along the capacities of the teachers. For example, mathematics teachers did the data analysis. The results of each task were discussed in the team though and informal learning took place. In school F, the tasks were rotated. Team members helped each other out and informal learning took place. In school D, informal learning especially took place in the interpretation of data. In collecting and analyzing data, the data expert did much of the work. In school E, this was the same, although the data analysis was not conducted by a data expert, but by a mathematics teacher. Other teachers did not learn with regard to the data analysis. In school C, the data expert did a lot of the work in collecting and analyzing data. The teachers in the team were to some extent able to learn from the data expert, but not from each other.

In schools A and B, new members joined the team. These were guided and supported by original team members and learned through informal learning on the job. In the remaining schools, no new team members joined the team.

The factors combined

In table 6, the sustainability of the datateam method and the presence of factors that influence the sustainability in the schools are being presented. A green space meant that the factor was present within the school. A green cross meant that the factor was to some extent present within the school. In school C, verbal persuasion by the school leader was considered absent within the school. The school leader in this school did use verbal persuasion in convincing teachers to use data. However, this was not in function of the data team and therefore did not affect the sustainability of the method. Also, in facilitation (meetings planned for whole year), only schools that did this *after* external support ended were ‘rewarded’ with a green space, since this planning ahead was a prerequisite of the external support. Therefore, schools D and F, which discontinued there data teams after the external support, were not indicated as schools that planned meetings for the whole year. Based on this table, there were six factors that were present in all three schools where the method was considered ‘sustained’, and to a lesser extent or absent in the other three schools. These were a vision on the use of data (including a shared vision on the datateam method), the development of at least one teacher-leader, shared decision making, active involvement by at least one school leader, verbal persuasion of the school leader (in function of the data team) and compensation, financially or in time, for the team members.

Table 6 Sustainability and its factors in the schools

	School A	School B	School E	School C	School D	School F
Datateam method sustained	■	■	■			
Culture of data use	■			■		
Vision on data use	■	■	■	■		
Culture of collaboration	■	✕		■		
Development of teacher-leaders	■	■	■		■	
Shared decision making	■	■	■	■		✕
Active involvement of school leader	■	■	■	■		■
Influencing self-efficacy teachers (feedback)	■			■		
Influencing self-efficacy teachers (role modelling)	■	■		■		
Influencing self-efficacy teachers (verbal persuasion)	■	■	■			■
Facilitation (compensation)	■	■	■		■	■
Facilitation (meetings planned for whole year)		■				
Facilitation (clearing schedules)		■	■	■		
Made use of ongoing professional development / external support (when continued)	■					
Informal learning on the job	■	■	✕		✕	■

5. Conclusion and discussion

5.1 Answering the research questions

In this study, the implications for practice and policy, as well as the sustainability of the method were addressed. The research questions were:

1) What are the implications for practice and policy of working with the datateam method?
2) To what extent is the datateam method sustainable?
3) How can differences in sustainability of the datateam method between schools be explained?

To answer these questions, six schools were selected which had been working with the datateam method. In these six schools, a total of 19 respondents were selected and interviewed. This led to a total of 20 interviews, as one respondent was involved in two of the selected schools. Respondents were school leaders, teachers and data experts.

With regard to the first research question, about the implications for practice and policy, the datateam method's aim could be explained as twofold. On the one side, the goal of the datateam method is to support teachers in developing the necessary skills to collect, analyze, interpret and use data. This implication on the skills of teachers occurred in five out of six schools, although not fully in one of these schools. Members from the data teams in schools A, B, E and F, indicated to be more aware of the importance of data and to have acquired the aforementioned skills. Also, the datateam method seemed to have led to more use of data by individual team members.

In school D, data team members only partially acquired the aforementioned skills. In school D, the data expert was necessary in the analysis of data. For teachers this was a difficult task, which they did not fully learn. The remaining skills were required though. In school C, the acquisition of the skills in collecting and analyzing data seemed ineffective. The main reason for this could be that the data expert took up a lot of work regarding these skills. What possibly influenced this process, was the point of view from the involved school leader. This school leader was responsible for the discontinuation of the team according to the datateam method. The school leader valued the team, because of the collaborative discussions about education and practices in the school. When it came to researching a particular problem though, she meant that such a team was not necessary, with the data expert being available. Therefore, the idea existed that teachers did not need to learn skills in collecting and analyzing data, as the school had a very skilled data expert at their disposal.

The second goal of the datateam method is to solve educational problems. The eight-step procedure should lead towards solving these problems collaboratively. Two schools were able to reduce the problem. The other four schools did not. What probably is most important here, is the continuation of the data team. Schools A and B continued the datateam method and were able to reduce their educational problem. School E continued the method as well, but the process moved forward less rapidly, due to problems with team size (as a result of limited facilitation) and data collection. However, it may be expected that the problem will be reduced in the future. In the other schools, the data team was discontinued or, as in school C, the eight-step procedure was no longer used. In these schools, the educational problem was neither solved nor reduced.

To conclude, the datateam method certainly has the potential to have implications for practice and policy. Two out of the three schools that continued the datateam method, already reduced the educational problem. The datateam method also has proven to be able to provide teachers with the earlier mentioned skills. It also has the potential to be spread in the school, as shown by the cases of school A and B. The inclusion in the school plan may also play an important role. This did not appear to be indicative of success though.

The second research question was: 'To what extent is the datateam method sustainable?' In the theoretical framework, three forms of sustainability were distinguished. In the first form, the original data team was continued. In the second form, a new data team was formed and active or a data team existing of some original team members and some new team members was created. In the third form, the data team was no longer active, but the method contributed to the fact that data are broadly used in the school. Two of the schools turned out to have continued the original data team, although possibly reduced in size. An additional school turned out to have continued with a team of some original team members and some new team members. The school plan in this school even stated that the formation of the data team might differ, based upon the kind of problem that is being researched.

In the other three schools, the method was not 'sustained'. In one of these schools, the team

was still active. The involved school leader though, decided to stop using data in the team. In this team, the data expert did most of the work and the school leader stated in the interview that for the use of data in the future this data expert would fulfil that task and not the data team.

In the three 'successful' schools, the acquisition of skills in collecting, analyzing, interpreting and using data by team members, was effective. This might be of importance for the sustainability of the method, although in two other schools this acquisition was also (to some extent) effective. A possible relationship in this regard however, should be further researched. To conclude, three out of six schools have continued the datateam method up until this point, whereas one of the other three schools might start the data team back up again in the upcoming school year.

The final research question addressed the factors influencing sustainability. The research question was: How can differences in sustainability of the datateam method between schools be explained? To answer these questions, a literature review was established with factors that influence the sustainability of educational reforms. There are several factors that were present in all three schools that continued the datateam method, and to a lesser extent or absent in the other three schools. However, there was not one factor that was exclusively present or absent at these three schools and therefore a clear indicator of sustainability. Based upon the similarities of the schools, several factors seemed to be of importance though.

The first factor that was described in the theoretical framework, was a culture on data use (Levin & Datnow, 2012; Wayman, 2005). This included explicit norms and expectations in the use of data (Lange et al., 2012). Also, data should be regularly used and valued (Datnow et al., 2007). Such a culture appeared to be present in two of the six schools in this study. One of these schools sustained the datateam method, the other did not. Thus, the findings of this study do not confirm the importance of a culture of data use.

Another factor was a vision and goals for data use (and the datateam method). A shared vision, including clear goals for data use and a focus on learning and improvement, was considered to contribute to the sustainability of a method (Sindelar et al., 2006; Owston, 2007; Sanches & Dias, 2013; Lange et al., 2012). This was confirmed by the findings in this study, as all schools that sustained the method had such a vision, as opposed to schools that did not sustain the datateam method.

Moreover, a culture of collaboration was described in the theoretical framework as important for the sustainability (Sindelar et al., 2006). In such a culture, teachers are offered opportunities to discuss data with each other (Levin & Datnow, 2012) and there should be little distance between teachers (Little, 2006). Such a culture of collaboration seemed to be present at some of the schools in the study, but the findings did not confirm this factor as important for the sustainability. Some respondents did however, stress the importance of communicating with colleagues about the data team. In addition, some respondents stated that this communication should be better in the future

Furthermore, the development of at least one teacher-leader in the datateam method seemed rather important. In the theoretical framework, it was suggested that these teacher-leaders are needed to continue the educational reform (Fullan, 2007; Hargreaves, 2002). The findings in this study confirmed this, as in all schools that continued the datateam method, teacher-leaders were present. On the other hand, in two of the three schools that did not 'sustain' the datateam method, there were no teacher-leaders involved.

Another factor that was considered important to the sustainability, was shared decision making (Sindelar et al., 2006; Fullan, 2007; Wahlstrom & Louis, 2008). In the data teams, teachers and school leader needed to work on a basis of equality, and decisions were to be made collaboratively. Again, this could be confirmed based upon the findings of this study, while shared decision making was only present in one of the three other schools.

The active involvement of the school leader was also considered important in the theoretical framework (Fullan, 2007; Sindelar et al., 2006). There was only one school, were the school leader was not actively involved. This school did not sustain the datateam method. Thus, this finding was confirmed by this study.

Furthermore, a school leader is able to influence the self-efficacy of teachers. This could contribute to the sustainability of an educational reform (Thoonen, 2012). A high sense of self-efficacy is supposed to lead to a more open attitude of teachers towards new ideas and more willingness to experiment with new methods. This could be accomplished by providing teachers with feedback in the use of data, the role modelling of data and through verbal persuasion by the school leader. The findings of this study, only offer support for the last component, verbal persuasion. This was present in the schools that sustained the method, while being absent in two of the three remaining schools. Providing teachers with feedback and role modelling were present in some of the schools, although these did not seem to be indicators of the sustainability. Thus, this study did not confirm the

importance of influencing the self-efficacy of teachers as an important factor for the sustainability. This may however depend on the skills of the school leader, as not all the school leaders were skilled in a way to be giving feedback in the use of data and be a role model in it. Furthermore, interviews may not be the most effective way to discover whether someone acts as a role model.

Another important factor, as mentioned in the theoretical framework, was the facilitation, i.e. establishing or maintaining conditions such as space and time, that are needed for the continuation of the method. With regard to the compensation of teachers for their participation, this seemed important for the sustainability. In all the schools which continued the data teams, compensation for teachers, financially or in time, was available. The other two components, planning meetings for the whole school year and clearing schedules of teachers if needed, were to some extent present. However, these were not confirmed as important indicators of the sustainability based upon the findings in this study. As the datateam method includes team collaboration, informal learning on the job was expected. Although this did happen in the 'successful' data teams, this did not appear to be the case in every data team. Therefore, it may be an indicator of the sustainability. A strong division of tasks and the involvement of the data expert were factors that possibly hindered this process of informal learning on the job.

Ongoing professional development was considered crucial to the sustainability of an educational reform (Wayman, 2005; Owston, 2007; Hargreaves, 2002). Only one of the six schools made use of additional external support in the third year. However, the need for external support, i.e. ongoing professional development, seemed to be related to the eight-step procedure of the method. One of the schools abandoned this procedure. However, the school leader stressed the importance of external support *if* continued with the eight-step procedure. In another school, the eight-steps are remembered, but not strictly followed. In this school, respondents also emphasized the importance of the external trainer in relation to strictly following the eight-step procedure. One of the six schools received additional external support in the third year. The school leader here, admitted that further external support was needed if the sequence of the eight steps is to be followed strictly. Thus, in practice it may be hard for data teams to strictly follow this eight-step procedure, also because respondents indicated that these steps take a lot of time. Therefore, one might need to wonder how important it is to follow this eight-step procedure and its implications for practice.

In conclusion, the findings of this study were able to confirm some of the factors, as described in the theoretical framework, as indicators of the sustainability. These included the vision of the use of data, the involvement of teacher-leaders, shared decision making, the active involvement of a school leader in the method and informal learning in the team. Also, compensation for the participants seemed to be important. No evidence was found to confirm the importance of a culture of data use, a culture of collaboration, ongoing professional development and influencing the self-efficacy of teachers. Also, there was no evidence to confirm the importance of planning meetings for the whole school year, and clearing schedules of teachers for the method.

5.2 Limitations of the study

The results of this study should be interpreted with caution. The conclusions were drawn from a rather small sample. Respondents from six schools were interviewed for the collection of data. Also, these schools and respondents were not chosen randomly. Through purposeful sampling, three schools were selected that appeared to have sustained the datateam method, and three were selected that appeared to have discontinued the datateam method. Therefore, the results do not, in general, allow for generalization to other schools. However, detailed descriptions of the schools were provided. This way, analytical generalization could be applied (Poortman & Schildkamp, 2011). Next to this, some of the findings may have been distorted by the fact that a few interviews were less extensive due to time reasons. However, a more detailed insight was gained through both interviewing data team members and screening documents. Also, both teachers and school leaders were interviewed as members of the data teams.

The results also reveal that influencing factors were interrelated. For example, a limited vision on data use may hinder the facilitation of a data-initiative such as the datateam method. This makes it harder to distinguish isolated factors as indicators of the sustainability and pleads for a cautious interpretation of the results.

Furthermore, the presence of role modelling within the school is hard to identify when using interviews. Thus, although the results of this study did not identify the presence of role modelling in all schools, it could have been present though. Multiple data team members per school were interviewed in order to gain a more detailed insight.

5.3 Directions for further research

It seems rather important that all school leaders fully support the datateam method for it to be continued. This is not limited to the school leader(s) involved in the data team, but includes all school leaders in the school. In one of the schools that discontinued the datateam method, this school did continue the team itself. Also, respondents indicated that the use of data was already extensively present in the school. The point of view of the school leader may have played a crucial role here. This school leader saw the team as an opportunity to talk about the quality and effectiveness of the school with colleagues, but did not see the need to research this with the help of data. For that, the school had a data expert at their disposal. The school leader did not see the need of schooling for teachers, with this data expert being available to do this work. Therefore, the team members did not acquire these skills, and educational problems were no longer being researched with the help of data in the team. This point of view of a school leader and the prominent role of a data expert in the data team may be topics that need to be further explored.

Furthermore, in schools A and B, where the data teams were continued, the teachers in the data teams were very enthusiastic about the method, and teachers were willing to invest time in it. Both teams had a teacher-leader, who initiated meetings and was responsible for the communication in the team. These data teams were very 'present' in the school. The other data team that was continued, in school E, also had a teacher leader who had these responsibilities. As opposed to these data teams, schools C and F were more dependent of the school leader. In these teams, the school leader, for example, initiated meetings. Teachers in these teams were more awaiting and took less initiatives. The method was not continued in these schools. In school C, the school leader was absent for a few months. In this period of time, the team became more or less inactive, due to a lack of initiative among the team members. In school F, teachers were also awaiting and took less initiatives. The school leader, who had been initiating meetings etc., handed over the team to another school leader. The team of teachers waited for the new school leader to take the initiative in meetings, which did not happen in the last school year. Therefore, the role of the school leader in the data team may be, among other things, indicative of the sustainability of the method. Further research with regard to this relationship should be conducted though.

This study provided more insight into the sustainability of the datateam method. However, the list of factors as described in the theoretical framework should not be understood as exhaustive. Also, this study did not take into account the relationships between factors. Future research could, therefore, focus on the relationships between these factors and the possible influence of other factors, such as the role of the school leader in the team.

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Appendix A

Interviewscheme school leader (data team still active)

Interviewschema schoolleider (data team nog actief)
Persoonlijk
1. U heeft een data team bij u op school gehad, wat was het onderwerp van dit data team?
   Welk doel had het data team?
   Is het data team nog altijd actief?
   Waar houdt het team zich momenteel mee bezig?
   Welke gevolgen heeft het vertrek van de trainer van de UT gehad?
   Zijn er naast het bestaande team, nog andere teams gevormd?(+onderwerp etc.)
2. Op welke manier nam u zelf deel aan het data team?
   In hoeverre was u steeds aanwezig?
   Heeft u zelf actief deelgenomen aan de bijeenkomsten?
3. Hoe denkt u over opbrengstgericht werken nu u deel heeft genomen aan een datateam?
   Wat vindt u ervan om beslissingen te onderbouwen met behulp van data?
   Hoe was dit voordat u deelnam aan het data team? (positief/negatief? Waarom?)
   Wat vindt u van de data team methode?
4. Wat heeft het data team voor u persoonlijk opgeleverd?
   Wat heeft u geleerd met betrekking tot het verzamelen en analyseren van data, het maken van instrumenten en het trekken van conclusies uit de data?
   In hoeverre heeft de datateam methode hieraan bijgedragen?
   In hoeverre vindt u dat u voldoende bekwaam bent aangaande deze capaciteiten?
   In hoeverre beschikken docenten over deze kwaliteiten?
   In hoeverre denkt u dat docenten van elkaar leren in de data teams?
5. Hoe past u opbrengstgericht werken toe in uw functie als gevolg van het werken in een data team?
   Kunt u voorbeelden noemen?
   In welke mate neemt u zelf beslissingen op basis van data?
   Kunt u voorbeelden noemen?

Beleid school
6. In hoeverre is de datateam methode onderdeel geworden van het schoolbeleid?
   Hoe is de visie op opbrengstgericht werken veranderd?
   Kunt u deze visie noemen?
   In hoeverre moesten docenten overtuigd worden van deze visie?
   Welke rol heeft u hierin gespeeld?
7. Op welke wijze wordt opbrengstgericht werken gestimuleerd binnen de school?
   In hoeverre moesten docenten (vooraf) overtuigd worden van de waarde van de datateam methode?
   Welke rol speelt u hierin?
   Welke rol speelt de eindverantwoordelijk schoolleider hierin?
   In hoeverre bieden docenten elkaar ondersteuning op dit gebied?
8. Welke veranderingen zijn doorgevoerd m.b.t. het faciliteren van opbrengstgericht werken?
   In hoeverre wordt er rekening gehouden met tijd en ruimte?
   Welke hulpmiddelen zijn beschikbaar voor het data team?
   Hoe wordt een docent begeleid wanneer hij of zij wil aansluiten bij een data team?
   Welke rol speelt u hierin?
   Eventueel, hoe worden spin-offs ondersteund bij afwezigheid van de trainer?

Praktijk school
9. Welke maatregelen zijn er voortgekomen uit het data team?
   Zijn deze maatregelen nog altijd van kracht?
   Op welke manier heeft u bijgedragen aan het ontwikkelen van de maatregelen?
   Op welke manier heeft de eindverantwoordelijk schoolleider hieraan bijgedragen?
   Als de maatregelen niet meer van kracht zijn, hoe komt dit?
   Wat heeft de rest van de school gemerkt van het data team?

10. Op welke manier hadden docenten invloed op de uitkomsten van het data team?
    In hoeverre hebben docenten de gelegenheid gehad om verantwoordelijkheid te nemen in het data team?
    Op welke manier hebben docenten feedback gekregen op het gebruik van data?

Interviewscheme school leader (data team not active)

Interviewschema schoolleider (data team *niet* actief)
Persoonlijk
1. U heeft een data team bij u op school gehad, wat was het onderwerp van dit data team?
    Welk doel had het data team?
    Is het data team nog altijd actief?
    Hoe komt dit?
    Welke gevolgen heeft het vertrek van de trainer van de UT gehad?
2. Op welke manier nam u zelf deel aan het data team?
    In hoeverre was u steeds aanwezig?
    Heeft u zelf actief deelgenomen aan de bijeenkomsten?
3. Hoe denkt u over opbrengstgericht werken nu u deel heeft genomen aan een datateam?
    Wat vindt u ervan om beslissingen te onderbouwen met behulp van data?
    Hoe was dit voordat u deelnam aan het data team? (positief/negatief? Waarom?)
    Wat vindt u van de data team methode?
4. Wat heeft het data team voor u persoonlijk opgeleverd?
    Wat heeft u geleerd met betrekking tot het verzamelen en analyseren van data, het maken van instrumenten en het trekken van conclusies uit de data?
    In hoeverre heeft de datateam methode hieraan bijgedragen?
    In hoeverre vindt u dat u voldoende bekwaam bent aangaande deze capaciteiten?
    In hoeverre beschikken docenten over deze kwaliteiten?
    In hoeverre denkt u dat docenten van elkaar leerden in de data teams?
5. Hoe past u opbrengstgericht werken toe in uw functie als gevolg van het werken in een data team?
    Kunt u voorbeelden noemen?
    In welke mate neemt u zelf beslissingen op basis van data?
    Kunt u voorbeelden noemen?

Beleid school
6. In hoeverre is de datateam methode onderdeel geworden van het schoolbeleid?
    Hoe is de visie op opbrengstgericht werken veranderd?
    Kunt u deze visie noemen?
    In hoeverre moesten docenten overtuigd worden van deze visie?
    Welke rol heeft u hierin gespeeld?

7. Op welke wijze wordt opbrengstgericht werken gestimuleerd binnen de school?
    In hoeverre moesten docenten (vooraf) overtuigd worden van de waarde van de datateam methode?
    Welke rol speelde u hierin?
    Welke rol speelde de eindverantwoordelijk schoolleider hierin?
    In hoeverre bieden docenten elkaar ondersteuning op dit gebied?

8. Welke veranderingen zijn doorgevoerd m.b.t. het faciliteren van opbrengstgericht werken?
    In hoeverre werd er rekening gehouden met tijd en ruimte?
    Is dit veranderd na het vertrek van Hanadie?
    Welke hulpmiddelen waren beschikbaar voor het data team?
    Hoe werd een docent begeleid wanneer hij of zij wou aansluiten bij een data team?
    Welke rol speelt u hierin?

Praktijk school
9. Welke maatregelen zijn er voortgekomen uit het data team?
    Zijn deze maatregelen nog altijd van kracht?
    Op welke manier heeft u bijgedragen aan het ontwikkelen van deze maatregelen?
    Op welke manier heeft de eindverantwoordelijk schoolleider hieraan bijgedragen?
    Als de maatregelen niet meer van kracht zijn, hoe komt dit?

[Geen maatregelen? Dan voorlopige uitkomsten of andere actiepunten?]
Wat heeft de rest van de school gemerkt van het data team?

10. Op welke manier hadden docenten invloed op de uitkomsten van het data team?
In hoeverre hadden docenten de gelegenheid om verantwoordelijkheid te nemen in het data team?
Op welke manier kregen docenten feedback op het gebruik van data?

Appendix B

Interview scheme teacher (data team still active)

Interviewschema docent (data team nog actief)
Persoonlijk
1. U heeft een data team bij u op school gehad, wat was het onderwerp van dit data team?
   Welk doel had het data team?
   Is het data team nog altijd actief?
   Waar houdt het team zich momenteel mee bezig?
   Welke gevolgen heeft het vertrek van de trainer van de UT gehad?
   Zijn er naast het bestaande team, nog andere teams gevormd?(+onderwerp etc.)
2. Hoe denkt u over opbrengstgericht werken nu u deel heeft genomen aan een datateam?
   Wat vindt u ervan om beslissingen te onderbouwen met behulp van data?
   Hoe was dit voordat u deelnam aan het data team? (positief/negatief? Waarom?)
   Wat vindt u van de data team methode?
3. Wat heeft het data team voor u persoonlijk opgeleverd?
   Wat heeft u ervan geleerd?
   Hoe past u opbrengstgericht werken toe in uw klas?
   Deed u dit ook al voordat u in het data team kwam?
   Hoe vaak doet u dit? Voorbeelden?
4. In hoeverre vindt u dat u voldoende bekwaam bent om data te kunnen verzamelen en analyseren, om instrumenten te maken en om conclusies te trekken uit de data?
   In hoeverre beschikken andere docenten over deze kwaliteiten?
   Eventueel bij onvoldoende, wat heeft u hieraan gedaan?
   In hoeverre denkt u dat docenten van elkaar leren in de data teams?
5. Op welke manier nam de schoolleider zelf deel aan het data team?
   Heeft de schoolleider zelf actief deelgenomen aan de bijeenkomsten?
   Op welke manier hebben docenten feedback gekregen op het gebruik van data?
   In welke mate neemt de schoolleider zelf beslissingen op basis van data?
   In hoeverre is de schoolleider voldoende bekwaam om data te kunnen verzamelen en analyseren, om instrumenten te maken en om conclusies te trekken uit de data?

Beleid school
6. In hoeverre is de datateam methode onderdeel geworden van het schoolbeleid?
   Hoe is de visie op opbrengstgericht werken veranderd?
   Kunt u deze visie noemen?
   In hoeverre moest u overtuigd worden van deze visie?
   Hoe was dit voor andere docenten?
   Welke rol heeft de schoolleider hierin gespeeld?

7. Op welke wijze wordt opbrengstgericht werken gestimuleerd binnen de school?
   In hoeverre moest u (vooraf) overtuigd worden van de waarde van de datateam methode?
   En hoe was dit bij andere docenten?
   Welke rol speelt de schoolleider hierin?
   Welke rol speelt de eindverantwoordelijk schoolleider hierin?
   In hoeverre bieden docenten elkaar ondersteuning op dit gebied?
   In hoeverre bieden collega's die niet in het data team zitten ondersteuning?

8. Welke veranderingen zijn doorgevoerd m.b.t. het faciliteren van opbrengstgericht werken?
   In hoeverre wordt er rekening gehouden met tijd en ruimte?
   Welke hulpmiddelen zijn beschikbaar voor het data team?
   Hoe wordt een docent begeleid wanneer hij of zij wil aansluiten bij een data team?
   Welke rol speelt de schoolleider hierin?
   Welke andere mogelijkheden op ondersteuning zijn er als het niet loopt zoals het zou moeten?
   Eventueel, hoe worden spin-offs ondersteund bij afwezigheid van de trainer?

Praktijk school

9. Welke maatregelen zijn er voortgekomen uit het data team?
    Zijn deze maatregelen nog altijd van kracht?
    Op welke manier heeft u bijgedragen aan het ontwikkelen van deze maatregelen?
    Op welke manier hebben andere docenten hieraan bijgedragen?
    In hoeverre hebben docenten de gelegenheid gehad om verantwoordelijkheid te nemen in het data team?
    Op welke manier heeft de schoolleider bijgedragen aan de uitkomsten van het data team?
    Op welke manier heeft de eindverantwoordelijk schoolleider hieraan bijgedragen?
    Als de maatregelen niet meer van kracht zijn, hoe komt dit?
    Wat heeft de rest van de school gemerkt van het data team?

Interview scheme teacher (data team not active)

Interviewschema docent (data team *niet* actief**)**

Persoonlijk

1. U heeft een data team bij u op school gehad, wat was het onderwerp van dit data team?
    Welk doel had het data team?
    Is het data team nog altijd actief?
    Hoe komt dit?
    Welke gevolgen heeft het vertrek van de trainer van de UT gehad?
2. Hoe denkt u over opbrengstgericht werken nu u deel heeft genomen aan een datateam?
    Wat vindt u ervan om beslissingen te onderbouwen met behulp van data?
    Hoe was dit voordat u deelnam aan het data team? (positief/negatief? Waarom?)
    Wat vindt u van de data team methode?
3. Wat heeft het data team voor u persoonlijk opgeleverd?
    Wat heeft u ervan geleerd?
    Hoe past u opbrengstgericht werken toe in uw klas?
    Deed u dit ook al voordat u in het data team kwam?
    Hoe vaak doet u dit? Voorbeelden?
4. In hoeverre vindt u dat u voldoende bekwaam bent om data te kunnen verzamelen en analyseren, om instrumenten te maken en om conclusies te trekken uit de data?
    In hoeverre beschikken andere docenten over deze kwaliteiten?
    Eventueel bij onvoldoende, wat heeft u hieraan gedaan?
    In hoeverre denkt u dat docenten van elkaar konden leren in de data teams?
5. Op welke manier nam de schoolleider zelf deel aan het data team?
    Heeft de schoolleider zelf actief deelgenomen aan de bijeenkomsten?
    Op welke manier hebben docenten feedback gekregen op het gebruik van data?
    In welke mate neemt de schoolleider zelf beslissingen op basis van data?
    In hoeverre is de schoolleider voldoende bekwaam om data te kunnen verzamelen en analyseren, om instrumenten te maken en om conclusies te trekken uit de data?

Beleid school

6. In hoeverre is de datateam methode onderdeel geworden van het schoolbeleid?
    Hoe is de visie op opbrengstgericht werken veranderd?
    Kunt u deze visie noemen?
    In hoeverre moest u overtuigd worden van deze visie?
    Hoe was dit voor andere docenten?
    Welke rol heeft de schoolleider hierin gespeeld?
7. Op welke wijze wordt opbrengstgericht werken gestimuleerd binnen de school?
    In hoeverre moest u (vooraf) overtuigd worden van de waarde van de datateam methode?
    En hoe was dit bij andere docenten?
    Welke rol speelt de schoolleider hierin?
    Welke rol speelt de eindverantwoordelijk schoolleider hierin?
    In hoeverre boden docenten elkaar ondersteuning op dit gebied?
    In hoeverre boden collega's die niet in het data team zaten ondersteuning?

8. Welke veranderingen zijn doorgevoerd m.b.t. het faciliteren van opbrengstgericht werken?
In hoeverre werd er rekening gehouden met tijd en ruimte?
Veranderde dit na het vertrek van Hanadie?
Welke hulpmiddelen waren beschikbaar voor het data team?
Hoe werd een docent begeleid wanneer hij of zij wou aansluiten bij een data team?
Welke rol speelde de schoolleider hierin?
Welke andere mogelijkheden op ondersteuning waren er als het niet liep zoals het zou moeten?

Praktijk school

9. Welke maatregelen zijn er voortgekomen uit het data team?
Zijn deze maatregelen nog altijd van kracht?
Op welke manier heeft u bijgedragen aan het ontwikkelen van deze maatregelen?
Op welke manier hebben andere docenten hieraan bijgedragen?
In hoeverre hebben docenten de gelegenheid gehad om verantwoordelijkheid te nemen in het data team?
Op welke manier heeft de schoolleider bijgedragen aan de uitkomsten van het data team?
Op welke manier heeft de eindverantwoordelijk schoolleider hieraan bijgedragen?
Als de maatregelen niet meer van kracht zijn, hoe komt dit?
Wat heeft de rest van de school gemerkt van het data team?

Appendix C

Interview scheme data expert (data team still active)

Interviewschema kwaliteitszorgmedewerker (data team nog actief)

Persoonlijk

1. U heeft een data team bij u op school gehad, wat was het onderwerp van dit data team?
   Welk doel had het data team?
   Is het data team nog altijd actief?
   Waar houdt het team zich momenteel mee bezig?
   Welke gevolgen heeft het vertrek van de trainer van de UT gehad?
   Zijn er naast het bestaande team, nog andere teams gevormd?(+onderwerp etc.)
2. Op welke manier nam de schoolleider deel aan het data team?
   In hoeverre was deze steeds aanwezig?
   Heeft deze zelf actief deelgenomen aan de bijeenkomsten?
3. Hoe denkt u over opbrengstgericht werken nu u deel heeft genomen aan een datateam?
   Wat vindt u ervan om beslissingen te onderbouwen met behulp van data?
   Hoe was dit voordat u deelnam aan het data team? (positief/negatief? Waarom?)
   Wat vindt u van de data team methode?
4. Wat heeft het data team voor u persoonlijk opgeleverd?
   Wat heeft u geleerd met betrekking tot het verzamelen en analyseren van data, het maken van instrumenten en het trekken van conclusies uit de data?
   In hoeverre heeft de datateam methode hieraan bijgedragen?
   In hoeverre vindt u dat de schoolleider voldoende bekwaam is aangaande deze capaciteiten? (PD)
   In hoeverre beschikken docenten over deze kwaliteiten?
   In hoeverre denkt u dat docenten van elkaar leren in de data teams?
5. Hoe past u opbrengstgericht werken toe in uw functie als gevolg van het werken in een data team?
   Kunt u voorbeelden noemen?
   In welke mate neemt u zelf beslissingen op basis van data?
   Kunt u voorbeelden noemen?

Beleid school

6. In hoeverre is de datateam methode onderdeel geworden van het schoolbeleid?
   Hoe is de visie op opbrengstgericht werken veranderd?
   Kunt u deze visie noemen?
   In hoeverre moesten docenten overtuigd worden van deze visie?
   Welke rol heeft de schoolleider hierin gespeeld?

7. Op welke wijze wordt opbrengstgericht werken gestimuleerd binnen de school?
   In hoeverre moesten docenten (vooraf) overtuigd worden van de waarde van de datateam methode?
   Welke rol speelt de schoolleider hierin?
   Welke rol speelt de eindverantwoordelijk schoolleider hierin?
   In hoeverre bieden docenten elkaar ondersteuning op dit gebied?
8. Welke veranderingen zijn doorgevoerd m.b.t. het faciliteren van opbrengstgericht werken?
   In hoeverre wordt er rekening gehouden met tijd en ruimte?
   Welke hulpmiddelen zijn beschikbaar voor het data team?
   Hoe wordt een docent begeleid wanneer hij of zij wil aansluiten bij een data team?
   Welke rol speelt u hierin?
   Eventueel, hoe worden spin-offs ondersteund bij afwezigheid van de trainer?

Praktijk school

9. Welke maatregelen zijn er voortgekomen uit het data team?
   Zijn deze maatregelen nog altijd van kracht?
   Op welke manier heeft de schoolleider bijgedragen aan het ontwikkelen van de maatregelen?
   Op welke manier heeft de eindverantwoordelijk schoolleider hieraan bijgedragen?

Als de maatregelen niet meer van kracht zijn, hoe komt dit?
Wat heeft de rest van de school gemerkt van het data team?

10. Op welke manier hadden docenten invloed op de uitkomsten van het data team?
In hoeverre hebben docenten de gelegenheid gehad om verantwoordelijkheid te nemen in het data team?
Op welke manier hebben docenten feedback gekregen op het gebruik van data?

Interview scheme data expert (data team not active)

Interviewschema kwaliteitszorgmedewerker (data team *niet* actief)

Persoonlijk

1. U heeft een data team bij u op school gehad, wat was het onderwerp van dit data team?
Welk doel had het data team?
Is het data team nog altijd actief?
Hoe komt dit?
Welke gevolgen heeft het vertrek van de trainer van de UT gehad?
2. Op welke manier nam de schoolleider zelf deel aan het data team?
In hoeverre was de schoolleider steeds aanwezig?
Heeft de schoolleider zelf actief deelgenomen aan de bijeenkomsten?
3. Hoe denkt u over opbrengstgericht werken nu u deel heeft genomen aan een datateam?
Wat vindt u ervan om beslissingen te onderbouwen met behulp van data?
Hoe was dit voordat u deelnam aan het data team? (positief/negatief? Waarom?)
Wat vindt u van de data team methode?
4. Wat heeft het data team voor u persoonlijk opgeleverd?
Wat heeft u geleerd met betrekking tot het verzamelen en analyseren van data, het maken van instrumenten en het trekken van conclusies uit de data?
In hoeverre heeft de datateam methode hieraan bijgedragen?
In hoeverre vindt u dat de schoolleider voldoende bekwaam is aangaande deze capaciteiten?
In hoeverre beschikken docenten over deze kwaliteiten?
In hoeverre denkt u dat docenten van elkaar leerden in de data teams?
5. Hoe past u opbrengstgericht werken toe in uw functie als gevolg van het werken in een data team?
Kunt u voorbeelden noemen?
In welke mate neemt u zelf beslissingen op basis van data?
Kunt u voorbeelden noemen?

Beleid school

6. In hoeverre is de datateam methode onderdeel geworden van het schoolbeleid?
Hoe is de visie op opbrengstgericht werken veranderd?
Kunt u deze visie noemen?
In hoeverre moesten docenten overtuigd worden van deze visie?
Welke rol heeft de schoolleider hierin gespeeld?

7. Op welke wijze wordt opbrengstgericht werken gestimuleerd binnen de school?
In hoeverre moesten docenten (vooraf) overtuigd worden van de waarde van de datateam methode?
Welke rol speelde de schoolleider hierin?
Welke rol speelde de eindverantwoordelijk schoolleider hierin?
In hoeverre bieden docenten elkaar ondersteuning op dit gebied?

8. Welke veranderingen zijn doorgevoerd m.b.t. het faciliteren van opbrengstgericht werken?
In hoeverre werd er rekening gehouden met tijd en ruimte?
Is dit veranderd na het vertrek van Hanadie?
Welke hulpmiddelen waren beschikbaar voor het data team?
Hoe werd een docent begeleid wanneer hij of zij wou aansluiten bij een data team?
Welke rol speelt de schoolleider hierin?

Praktijk school

9. Welke maatregelen zijn er voortgekomen uit het data team?
Zijn deze maatregelen nog altijd van kracht?

Op welke manier heeft de schoolleider bijgedragen aan het ontwikkelen van deze maatregelen?
Op welke manier heeft de eindverantwoordelijk schoolleider hieraan bijgedragen?
Als de maatregelen niet meer van kracht zijn, hoe komt dit?
[Geen maatregelen? Dan voorlopige uitkomsten of andere actiepunten?]
Wat heeft de rest van de school gemerkt van het data team?

10. Op welke manier hadden docenten invloed op de uitkomsten van het data team?
In hoeverre hadden docenten de gelegenheid om verantwoordelijkheid te nemen in het data team?
Op welke manier kregen docenten feedback op het gebruik van data?