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## Relationships in distributed leadership, inquiry-based working, and realizing educational change in Dutch primary education: teachers' and their school leader's perceptions

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### ABSTRACT

Although distributed leadership and inquiry-based working are relevant topics to primary education, there has been little discussion about how team members perceive these practices as meaningful in their day-to-day work. Following on from prior quantitative studies, the present study conducted a case study in which semi-structured interviews were employed to collect data. The findings suggested that teachers and their principal perceive distributed leadership and inquiry-based working as crucial to realizing educational change. More specifically, the case study showed how inquiry-based working could support distributed leadership and teachers' ability to take the initiative to create educational change. Specifying the relationships could help teachers and school leaders to consciously leverage distributed leadership and inquiry-based working techniques to fully meet students' needs.

### Introduction

The use of data in primary education is considered increasingly important for gaining a better understanding of pupils' learning processes and improving the quality of teaching (e.g. Brown et al., 2017; Datnow & Hubbard, 2016; Deppeler & Ainscow, 2016; Schildkamp, 2019). However, data alone do not provide all the information required by teachers and neither does access to large amounts of data guarantee educational improvement. Data must be analyzed and interpreted to find the answers to critical questions on student outcomes and education quality. Such analysis and interpretation require inquiry-based working and an involvement in deep learning (e.g. Earl & Katz, 2006; Krüger, 2010; Uiterwijk-Luijk et al., 2017). Inquiry-based working, as used by Earl and Katz (2006), Krüger (2010), Uiterwijk-Luijk et al. (2017), and Mandinach and Schildkamp (2020), is related to data-driven decision making (DDDM) in the sense that data are used as a basis of making decisions. However, inquiry-based working is much more complex. It demands an inquiry habit of mind and conducting inquiry in the

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school by teachers as well as school leaders and administrators. Moreover, it demands the competency of leaders to give lead to the development of an inquiry-based culture. An inquiry habit of mind involves heightened curiosity and asking questions to improve teaching strategies and realize educational development at the classroom and school level. The term ‘inquiry-based working’ is used throughout this paper based on the definition outlined above (Earl & Katz, 2006; Krüger, 2010; Mandinach & Schildkamp, 2020; Uiterwijk-Luijk et al., 2019, 2017).

The term culture in the context of the development of an inquiry-based culture can be defined in terms of organizational culture, in which we follow Schein (1992, p. 9)’s definition: ‘A pattern of shared basic assumptions invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration that have worked well enough to be considered valid and therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems’. In other words, an organizational culture focused on the development of an inquiry-based way of working implies that this way of working becomes part of the customs of that given group of people.

Realizing change requires coordination and leadership and is more successfully achieved when school leaders involve teachers in leadership activities to ensure their commitment to educational change (e.g. Brown et al., 2017; DeMatthews, 2014; Klar et al., 2016; Van Geel et al., 2019). Previous studies (Aldaihani, 2019; Buske, 2018; DeMatthews, 2014; F.P. Geijsel et al., 2009; Heck & Hallinger, 2009; Johnson & Voelkel, 2019; Klar et al., 2016) have shown that teachers’ involvement in their schools and in educational development may lead to successful educational change and that inquiry-based working can mediate the positive effect of leadership distribution on teachers’ change capacity. However, these quantitative studies do not provide in-depth insights into how teachers themselves perceive inquiry-based working in their day-to-day practices and how this way of working helps them realize educational change. Furthermore, distributed leadership has also been found to be positively related to inquiry-based working, though in what specific way it is related remains unclear. Therefore, the present study aims to address this gap in the research by exploring a best practice example selected from previous studies. This best practice is a case study of a school in which both the teachers and school leader had positive attitudes toward inquiry-based working and in which teachers were strongly involved in leadership activities. The main research question examined in this study is how teachers and their school leader perceive the relationship between inquiry-based working, distributed leadership, and realizing educational change in their daily practices.

## **Theoretical background**

This section first defines the key constructs of this study: teachers’ capacity to change, inquiry-based working, and distributed leadership. Following this, the relationships between the constructs are described.

### ***Teachers’ capacity to change***

Teachers’ capacity to realize educational change is generally defined as their ability to adopt innovations initiated by governments, school boards, or themselves, as well as their

potential to connect educational development and improvements to both individual and collective learning processes that engender change (F. Geijsel et al., 1999; Harris et al., 2015). An individual's capacity for change is critical in constantly changing and developing societies (Greany, 2018). This capacity represents a competence rather than a disposition; it is a dynamic element that can be developed and strengthened over time by activities and efforts initiated by school leaders or teachers. In the present study, educational change refers to changes in teaching practices that aim to improve students' learning. Meanwhile, teachers' capacity to change is defined as their ability to adopt changes in their teaching practice with the aim of improving students' learning. Based on the work of F.P. Geijsel et al. (2009), F. Geijsel et al. (1999), and Ho and Lee (2016), and Stoll (2009, 2013)), teachers' capacity to change is operationalized and investigated in terms of three contributing aspects: (1) collaboration (the interpersonal aspect); (2) teachers' undertaking of professional learning activities (the organizational aspect); and (3) motivational variables, such as the extent to which teachers internalize school goals and turn them into personal aims, their sense of self-efficacy, and their job satisfaction (the personal aspect).

### *Collaboration*

Educational change regarding teaching practices aimed at improving student learning is more successful when teachers collaborate with their colleagues (Ho & Lee, 2016; Stoll, 2009, 2013). As described by Little (1982), such collaboration refers to teachers working jointly to reach goals or solve problems by exchanging experiences, ideas, and knowledge.

### *Undertaking professional learning activities*

Undertaking professional learning activities is the organizational aspect of teachers' capacity to change. A teacher's level of active learning is determined by the extent to which they keep up to date with educational developments (Borman et al., 2003; F.P. Geijsel et al., 2009). Teachers who engage in such learning activities tend to share their knowledge and experience more; in addition, they tend to experiment with and reflect on their own work and classroom teaching (Hargreaves & Fullan, 2012; Thoonen et al., 2012).

### *Motivational variables*

Thoonen et al. (2011) found that teachers' commitment, professional efficacy, and job satisfaction were supportive motivational variables in educational change. Job satisfaction reflects a teacher's emotional state, which is informed by their experiences at work (Hulpia et al., 2009). Job satisfaction is influenced by both teachers' dispositional characteristics and the situational factors of the job. Teachers who are satisfied with their jobs have been shown to be more dedicated to their schools and more likely to contribute to and accept change (Thoonen et al., 2011).

Professional efficacy refers to a teacher's own beliefs about the professional competences they are expected to display in any given situation (F.P. Geijsel et al., 2009). Teachers with a strong sense of professional efficacy are more open to new ideas and more willing to experiment with new teaching methods (Lauermaann & Karabenick, 2013). A strong sense of professional efficacy can, therefore, contribute positively to teachers' ability to realize educational change (Woolfolk et al., 2008). Furthermore, organizational commitment or the extent to which a teacher feels psychologically allied

to their place of work (Moin, 2018) is strongly related to employees' behavior and intentions and, as such, can impact the realization of educational change (Delegach et al., 2017). Teachers who are committed to their schools have a strong belief in and acceptance of their school's goals, values, and vision as they relate to educational change (F.P. Geijsel et al., 2009; Moin, 2018).

### *Inquiry-based working*

In recent years, more and more scientific literature on inquiry-based working has been published internationally (see, for example, Mandinach & Schildkamp, 2020; Marsh & Farrell, 2015; Uiterwijk-Luijk et al., 2019, 2017). Inquiry-based working is important for several reasons. First of all, due to the change from an industrial to a knowledge society, it is important that students develop into inquiring citizens. Second, schools are innovative organizations, creating a need for data, both to support innovation and to monitor the innovation. Finally, schools are held more and more responsible for the quality of education, for the effectiveness of the school (external accountability). Therefore, it is necessary to collect data in the school. In summary, research in schools can be used for school development, for educational development and for accountability. Learning takes place at all levels in the school, not only by students, but also by teachers, school leaders and administrators. Previously, the term data driven decision making was more commonly used. (Ikemoto & Marsh, 2007; Lai & Schildkamp, 2013; Van Geel et al., 2016). However, where in case of inquiry-based working the emphasis is on the development perspective, data driven decision making emphasizes the accountability perspective with the criticism that it leads to a culture of accountability in schools that is counterproductive to learning. Inquiry-based working implies that teachers, school leaders and administrators themselves also work from an inquiry habit of mind, that they possess research skills to understand, analyze and interpret data and that they collaborate with colleagues in a culture of inquiry. This also demands something from their role as a leader: they must be able to lead an inquiry-based culture in their schools. Inquiry-based leadership is the stimulation of the joint use of data for educational and school development (Krüger, 2010). It requires the competence to organize the professional dialogue with the aim of jointly giving meaning to data. In this way people in the school again and again go through the process from data to information to knowledge to wisdom (Ikemoto & Marsh, 2007).

In the present study inquiry-based working is defined as having an inquiry habit of mind, as being data literate, and as contributing to a general culture of inquiry (Earl & Katz, 2006; Uiterwijk-Luijk et al., 2017). Inquiry-based working concentrates on enhancing curiosity, asking questions, and being open to deep learning as a means of improving teaching strategies and realizing educational change (Earl & Katz, 2006; Krüger, 2010; Mandinach & Schildkamp, 2020; Uiterwijk-Luijk et al., 2019, 2017). Of all aspects of inquiry-based working, working with an inquiry habit of mind appears to be the most important driver in enhancing teachers' capacity to change (Amels et al., 2019). In inquiry-based working, teachers and others systematically collect and analyze all the available data at the school and the classroom level (Earl & Fullan, 2003; Marsh & Farrell, 2015; Uiterwijk-Luijk et al., 2017). Data may be quantitative (e.g. test results) or qualitative (e.g. interviews, observation reports) and may be acquired from schools or by external research. Data can also take different forms, including input (e.g. children's

school entry), process (e.g. observations of school improvements), satisfaction (e.g. stakeholder surveys), or output (e.g. student outcomes) data (Marsh & Farrell, 2015). Teachers who obtain meaningful information and learn from such data are said to be data literate (Mandinach & Gummer, 2013). Using data in the classroom can help teachers effectively anticipate students' needs as they investigate and reflect on their own practices. By using data at the school level, teachers collectively give meaning to the data and, by conducting collaborative analyses and interpretations of the data, can draw insight into how certain teaching practices may be reinforced. In this collaborative process, wherein deep learning takes place, new ideas and knowledge can emerge that subsequently encourage instructional improvement (Katz & Dack, 2014; Little, 2012). Therefore, organizational cultures that foster working with an inquiry habit of mind, using data, and being data literate can encourage greater educational improvement (Brown et al., 2017; Deppeler & Ainscow, 2016; Krüger & Geijsel, 2011; Schildkamp, 2019; Schildkamp et al., 2012; Uiterwijk-Luijk et al., 2017).

## ***Distributed leadership***

### ***Distributed leadership in a team***

Developing and maintaining inquiry-based work practices requires coordination; therefore, leadership is crucial (Spillane, 2012b). School leaders can organize, support, and enable inquiry-based working by being cognizant of teachers' needs for involvement in change processes. In such scenarios, leadership is a feature of an organization, rather than of a single person (Spillane, 2012a, 2012b). For this reason, this study focuses on distributed leadership. In distributed leadership, leadership is assumed to be a feature of a team as a whole (Harris, 2014; Spillane, 2012a). Distributed leadership exists as a continuum and varies in extent (Tam, 2019; Tian et al., 2016) as the best-equipped or skilled team members with respect to particular goals or organizational necessities take on leadership roles (Binkhorst et al., 2018; Harris, 2014; Spillane, 2012a). A well-supported distribution of leadership can enhance an organization's capacity to learn and change. The success of such changes also depends on the degree of teachers' involvement in an organization and in decision-making processes (e.g. Aldaihani, 2019; Buske, 2018; DeMatthews, 2014; Heck & Hallinger, 2009; Johnson & Voelkel, 2019; Klar et al., 2016). Distributed leadership includes both formal leadership roles adjudged by the school leader and informal leadership roles informally adjudged and taken by colleagues, together with initiators and followers, where initiators are teachers who take on leadership roles based on their expertise, and followers are teachers who follow their initiating colleagues in light of their knowledge on a specific topic (Spillane, 2012a). Leadership distribution ensures that teachers' expertise is employed, responsibility is shared, and decisions are made collectively.

The extent to which leadership roles are distributed also depends on the school leader's beliefs about what needs to be achieved, the expertise present among the teachers, and the principal's own capabilities (Pineda-Báez et al., 2019; Spillane et al., 2007; Szeto & Cheng, 2018). For example, a principal may share decision-making by embracing interactions, stimulating collaborative work settings, and creating conditions for others to lead with clear direction (Harris, 2014; Heck & Hallinger, 2009). In light of the above discussion, in the present study, distributed leadership is explored with

reference to teachers who take on leadership roles through initiating and taking responsibility, teachers who grant one another leadership roles, teachers who participate in decision-making regarding educational development at the school level, and teachers who actively involve themselves in school development (Aldaihani, 2019; Heck & Hallinger, 2009; Spillane, 2012a).

### ***Connection to previous studies: relationships between inquiry-based working, leadership, and educational change***

Organizational cultures in which inquiry-based working and data use are common can foster educational improvement (e.g. Krüger & Geijsel, 2011; Schildkamp et al., 2012). Reform and change are supported by inquiry-based working (Earl & Katz, 2006; Krüger, 2010; Uiterwijk-Luijk et al., 2019, 2017) because this method of working leads to deeper learning across a school (Katz & Dack, 2014; Van Gasse et al., 2017).

Developing and maintaining an inquiry-based work environment requires coordination and facilitation. Cranston (2016) and Spillane (2012b) found that leadership that specifically prompts teachers to recognize their ownership of change initiatives may be crucial to the development of such a working environment. According to Schein (1992), leadership and organizational culture are strongly related: the leader shapes the culture and is in turn shaped by the resulting culture. Schein even stated that "the only thing of real importance that leaders do is to create and manage culture and that the unique talent of leaders is their ability to work with culture" (Schein, 1992, p. 5). Schein has been criticized for being too mechanistic and overstating the impact of leaders on organizational culture (Morgan, 1997). However, in organizing a culture focused on teacher learning and educational change in schools, school leaders are found to be crucial in such a process (Slegers & Leithwood, 2010). Research on the role of leadership in primary education to encourage teachers to adopt inquiry-based working practices is still scarce (Cranston, 2016; Uiterwijk-Luijk et al., 2017). Previous studies (Aldaihani, 2019; Buske, 2018; DeMatthews, 2014; F.P. Geijsel et al., 2009; Heck & Hallinger, 2009; Johnson & Voelkel, 2019; Klar et al., 2016) have shown that teachers' involvement in their schools and in educational development may lead to successful educational change and that inquiry-based working can mediate the positive effect of leadership distribution on teachers' change capacity. However, an in-depth understanding of teachers' perceptions of inquiry-based working in their day-to-day practices and the relationships between the constructs, as well as how this method of working helps realize educational change, is as yet unclear.

Accordingly, this study addresses the following research question: *How do teachers and their school leader perceive inquiry-based working and distributed leadership as being related to realizing educational change?*

### **Research context**

This study focuses on primary education in the Netherlands for children aged 4–12 years spread out over eight different grades. Schools in the Dutch education system are largely autonomous in their educational, pedagogical, and financial practices (Organization for Economic Co-operation and Development [OECD], 2012). There is no national



curriculum, though the Dutch government issues evaluation and assessment mandates, such as risk-based inspections. Control over test results is central, and the use of assessment data to improve student outcomes has increased. Quality standards focus on cognitive subjects and are applied to all schools. These standards include specific targets set by the government for all grades. In the final year of primary education, a national test is completed by all students, and students receive a recommendation for an appropriate secondary school based on their test results. In addition, schools are monitored by the National Inspectorate, which is the institute responsible for maintaining educational quality and holding schools accountable. To comply with quality standards and serve the different educational needs of students, schools are expected to strive for improvements in teaching. Inquiry-based working is assumed to be helpful in adapting improved teaching strategies (Datnow & Hubbard, 2016), as is involving teachers in leadership (e.g. Buske, 2018).

## Methodology

### *Design and case selection*

To explore how inquiry-based working and distributed leadership as they relate to educational change are perceived, a research design close to teachers' day-to-day practices was formulated. Therefore, a qualitative case study methodology was employed, which involved conducting interviews (Deppeler & Ainscow, 2016; Yin, 2018). The unit of analysis was a Dutch primary school. The case study school was selected from a sample of 65 primary schools that participated in a previous study conducted in April 2016, in which almost 500 schools were invited by post and e-mail to participate (Amels et al., 2020). This previous study explored the extent to which inquiry-based working and distributed leadership affect teachers' capacity to change. A web-based survey was sent to 1,209 teachers, which resulted in a sample of 787 teachers after cleaning the data. In addition, the principals of all the participating schools were interviewed.

In the present study, the case study school was selected based on its teachers' high scores and the strong correlations among the focal constructs of inquiry-based working and distributed leadership noted in the previous survey study. Therein, a 5-point Likert scale was used, ranging from 1 to 5. The average scores of the case study school were  $M = 4.5$  on inquiry-based working (Mall schools = 4.1),  $M = 4.4$  on distributed leadership (Mall schools = 4.0), and  $M = 4.4$  on capacity to change (Mall schools = 4.1). Overall, with regard to the selected case study, the standard deviations were small, varying between 0.21 and 0.57. Teachers' answers were very similar. The correlations between the constructs ranged from 0.56 to 0.74 (Author, 2020). Although other schools also scored high on the questionnaire, compared with the other schools the answers given by the principal of the selected school were strongly in line with the teachers' questionnaire results. For example, the principal explained

I want to make use of all the available expertise. With regard to specific topics, some teachers have more expertise than I have myself. I encourage my teachers to come to the fore and share their knowledge. And my teachers give room to one another to do so and take the initiative. I also encourage them to enquire things instead of accepting unquestioningly.

Thereby, we use data because data are supportive. But moreover, they are essential as they show us what to do.

By combining the teachers' questionnaire results and the principal's interview responses, the best practice school emerged. The strong presence of inquiry-based working and distributed leadership made it possible to investigate which teachers' and principal's perceptions and experiences may rise with regard to the relationships between inquiry-based working, participating in leadership activities and realizing educational change. Further, selecting a high-scoring school for the current study was essential for exploring the research question as it was necessary to ensure that the aim of identifying the relationships between the main constructs (i.e. inquiry-based working, distributed leadership, and realizing educational change) would not be disturbed due to a lack of distributed leadership or inquiry-based working.

As teachers' capacity to change does not appear to be a commonly discussed concept in teachers' practices, teachers may not be aware of their capacity to change. However, teachers may be aware of their needs, preparedness, and willingness to realize educational change (Deppeler & Ainscow, 2016; Harris et al., 2015). Accordingly, in the present study, when interviewing teachers, the term 'realizing educational change' was used, rather than referring to teachers' 'capacity to change.'

### *Description of the school*

The focal school was located in a small city in the eastern part of the Netherlands. In this district, 26% of the inhabitants were migrant, in general coming from Asian countries such as Syria and Afghanistan ([www.cbs.nl](http://www.cbs.nl)). In the school's student population, this percentage was reflected. The culturally diverse student population and the variation in socioeconomic status within the students' population demanded for the school's specific attention in meeting the educational needs of all their students.

The team comprised 23 Dutch, white teachers (2 male, 21 female), a principal, and a location manager who were both female. Teachers' age varied between 21 and 63 years. All teachers were employed on fixed-term-contracts.

The school was governed by a school board. Most teachers worked in one grade; a few teachers spanned two grades but still taught the same student age-group. Beyond their teaching, several teachers undertook other formal tasks, such as serving special educational students' needs and providing digital support. The school had an explicit shared educational policy with a strong focus on students' well-being and learning and on pedagogical and professional relationships; in addition, it emphasized 'responsibility and autonomy' and characterized educational change as 'an ongoing process.'

### *Participants*

The teachers were asked to participate voluntarily. Twelve of the 23 teachers expressing a willingness to participate. All grades were included. The principal played a crucial role in encouraging teachers to adopt inquiry-based work practices (Spillane, 2012b), and the extent to which leadership roles were distributed also depended on the principal's beliefs about the teachers' different levels of expertise (Pineda-Báez et al., 2019; Spillane et al.,

**Table 1.** Descriptive overview of the participants.

Team member	Function	Gender**	Years of Teaching Experience	Years of Teaching Experience at the School	Level of Education*
1	Anna Teacher grade 1/2	Female	2	2	M
2	Ella Teacher grade 1/2	Female	8	7	B
3	Karen Teacher grade 3	Female	10	10	M
4	Jenna Teacher grade 4	Female	9	9	B
5	Kim Teacher grade 5	Female	5	2	B
6	Lynn Teacher grade 5/6	Female	8	2	B
7	Kate Teacher grade 6	Female	9	8	B
8	Laura Teacher grade 7, location manager	Female	15	15	B
9	Lucas Teacher grade 7	Male	17	3	B
10	Fay Teacher grade 8	Female	4	4	B
11	Eva Teacher grade 8	Female	9	9	B
12	Emily School leader	Female	37	18	M

\*B = Bachelor's degree, M = Master's degree.

\*\*A relatively common gender distribution in Dutch primary schools

2007; Szeto & Cheng, 2018); therefore, the principal was also interviewed. As such, a complete picture was obtained. All participants were native Dutch. One of the participating teachers was male, the other teachers as well as the principal were female. Their years of teaching experience at this school varies between 2 and 18 years. Table 1 provides a descriptive overview of the participants, who are identified with pseudonyms. The 13 participants were interviewed in November 2017.

### Interviews and procedure

The interview protocol was based on the scales measured in the teachers' questionnaire (inquiry-based working, distributed leadership, teachers' capacity to change, and the questionnaire results [Author, 2020]). Questions on the participants' perceptions of these concepts were included, and the questionnaire also explored the relationships between distributed leadership, inquiry-based working, and realizing educational change. Additional questions were asked to determine whether the respondents' interpretations of distributed leadership and inquiry-based working were in line with the definitions used in the present study. The same questions were presented to the teachers and the principal, though an additional question was added to assess the principal's role in encouraging teachers to realize change (see appendix A for the interview protocol used in the present study).

All interviews were conducted by a single researcher and lasted approximately one hour. With regard to ethical considerations, the purpose of the research was presented to the participants. Consent to take part in the study was obtained from the participants, and they were also asked for their consent for the findings of the research to be published. Assurances were provided that no personally identifiable details would be included, and the participants were informed that they could withdraw from the study at any time. All participants granted permission.

## Data analysis

The interviews were digitally recorded, transcribed verbatim, and coded by two researchers using ATLAS-ti version 1.6.0. Deductive coding was first adopted using codes such as working with an inquiry habit of mind, data use at the classroom and school level, the adoption of leadership roles by teachers, the granting of leadership roles by teachers, and the active involvement of teachers in school development. Additional codes, such as the relationship between inquiry-based working and realizing change, distributed leadership, and realizing change, as well as between all three constructs, were also formulated. Two researchers extracted key sentences from the interview transcripts that represented the codes (Cohen's kappa =.77, which was substantial; 90% agreement). Differences in coding were identified, discussed, and resolved by the two researchers. In the discussion, an inductive approach allowed other codes to emerge from the data, such as trust, which was described the feeling that a colleague was considerate, thoughtful, fair, and transparent (cf. Fink, 2016), and transparency, which was described as openness at the team level with regard to how leadership roles are formally and informally adjudged (cf. Spillane & Healey, 2010).

## Results

Prior to answering the research question, the alignment of the participants' perceptions of the constructs with the definitions utilized in the present study was confirmed. The teachers described inquiry-based working as being focused on supporting one another's efforts to meet students' day-to-day educational needs using data. These data included test results, teachers' observations, conversations with students and parents, and satisfaction ratings (Marsh & Farrell, 2015; Uiterwijk-Luijk et al., 2017). All 11 teachers referred to meetings in which they collaboratively analyzed and interpreted data, searched for strong and weak points in their teaching strategies, asked questions of one another, and evaluated actions. According to Anna [2],<sup>1</sup> Jenna [9], Lynn [9], Kate [9], Karen [10], and Laura [15], they were eager to learn. They considered themselves curious, continuously questioning, and focused on developing teaching strategies to meet students' needs, which was in line with research by Earl and Katz (2006). These teachers related their curious attitudes to their use of data:

Not because Emily [the principal] told us we have to, but because we want the best for our pupils, and the data show me what to do and what has to be changed. I want to be a good teacher, so I cannot ignore what the data tell me. I have to find out what went wrong and why, and what I have to do to improve my teaching strategies (Karen [10]).

In relation to inquiry-based working, the principal also referred to selecting and analyzing various types of data to improve the school's educational quality, which was in line with research by Marsh and Farrell (2015) and Uiterwijk-Luijk et al. (2017). Just like the teachers, the principal identified the teachers and herself as curious and eager. She noted that she encouraged them to act in an inquiring way because

decisions based on assumptions could be less valuable compared to decisions which were made after assumptions were investigated. You can't simply accept what you see or hear. In our daily teaching practices, we need to search for justification rather than acting intuitively.

In discussing distributed leadership, the teachers reported being given permission from their colleagues and the principal to take the initiative and assume responsibility based on their expertise, as well as being encouraged to hone their ability to learn by exploring and experimenting:

In our school, we are all so committed. We have such a freedom and space to initiate, and then, we form a study group ourselves to enquire things. Giving room is the most important thing we need. Then, we can take initiatives, learn together and develop ourselves and our teaching. (Eva [9])

The teachers' feedback reflected research findings by Spillane (2012a) and Harris (2014). Furthermore, being given space to take responsibility appeared to be crucial to Anna [2], Karen [10], Ella [8], Lynn [8], Kate [9], and Eva [9]. In line with findings by Hulpia et al. (2009) and Thoonen et al. (2012), the teachers linked the relationship between their ability to take the initiative and assume responsibility to their sense of professional efficacy, job satisfaction, and commitment.

Without the ability to take initiatives and use my expertise, I would not be so committed. Moreover, I would not even stay at this school. I would try to find another school (Kate [9]).

The principal in turn highlighted the importance of leveraging teachers' expertise to strengthen their commitment through their participation in decision-making. As such, her response was in line with findings by Pineda-Báez et al. (2019) and Szeto and Cheng (2018). Noting the varying expertise of the different team members, the principal also acknowledged that others may be better equipped than her to reach a particular goal or resolve a specific problem. Here, her response was in line with the findings of Spillane (2012a). The principal also noted the importance of encouraging teachers to take leadership roles and creating an environment in which the use of knowledge and support were commonplace. She expressed confidence in the teachers' knowledge and experience, which led her to encourage them to take on leadership roles. In this sense, the principal paid continuous attention to teachers' collective efficacy and sense of well-being.

With regard to the research question in the present thesis – *How do teachers and their school leader perceive inquiry-based working and distributed leadership as being related to realizing educational change?* – 10 out of 11 teachers mentioned inquiry-based working as a method of working that supports initiative-taking and sharing expertise. In addition, they added that data provide new information and complement existing knowledge. As summarized by Fay [4]:

When we use data such as student results, observations, or conversations with students and parents, this way of working provides us information based on facts. I can't ignore the facts, so I have to initiate. Besides, the facts help me to feel confident. So, inquiry-based working supports and encourages us to undertake the necessary actions and take initiatives.

Using a combination of curiosity and available data encouraged the teachers to take the initiative and share their knowledge. One teacher did not mention this relationship due to her strong focus on the classroom as her teaching group included a higher-than-average number of students with special educational needs or who had recently joined the school. However, most teachers reported that inquiry-based working helped them understand the required changes and encouraged them to take the initiative both in their daily teaching practices in the classroom and at the school level.

When I deepen my knowledge by using data, I feel more comfortable to share my opinion and to take responsibility. Then, I have confidence in myself and that I am doing a good job. So, data and knowledge help me to stand up (Lucas, [17]).

The school principal explained the relationship between inquiry-based working, distributed leadership, and the realization of educational change as follows:

Realizing educational change is a daily coming around challenge. Using data and working in an inquiry-based way offer us information about why we have to change and what we have to change. So, why and in which way we can improve our education and teaching strategies. And I am convinced of the fact that when teachers are able to utilize their expertise in these change processes, first, their expertise will be strengthened by the data. Second, when teachers can take a leadership role based on their expertise, they may feel like owners of the changes. And everybody wants to experience ownership instead of listening to someone who tells you what to do. And last, I believe that in this way their sense of efficacy will reinforce as well as their joy, which in my opinion is an important part in commitment. And in a committed team, you can realize a lot. I am the principal, but I cannot realize educational change on my own, so involving my team is very important to me.

Due to her emphasis on necessary educational changes, the principal related teachers' ability to take the initiative to their sense of professional efficacy and, for this reason, encouraged the teachers to engage in inquiry-based work, such as by adopting an inquiring habit of mind (Earl & Katz, 2006).

Although the teachers and principal agreed that inquiry-based working and distributed leadership were meaningful, they differed in their focus and thoughts on why this might be. The teachers cited their natural need for space to take the initiative and use their expertise, with a particular focus on the classroom; meanwhile, the principal emphasized teachers' participation in decision-making processes and educational development at the school level. The principal's rationale was as follows: leveraging teachers' expertise can strengthen their commitment, and others may be better equipped than she to attain a particular goal. The principal's confidence in the teachers' expertise enabled her to create an organizational culture in which sufficient space and shared expertise were the norm. She regarded teachers' expertise, particularly the differences in teachers' expertise, to be inherent to processes such as taking the initiative and assuming responsibility.

In turn, the teachers' perspectives reflected their eagerness to learn. They sought specific expertise and aimed for certain goals, which also contributed to the organization and to their sense of fulfillment at work (Ross et al., 2016).

In discussing the realization of educational change through inquiry-based working and granting and adopting leadership roles, both the principal and teachers emphasized the importance of a team culture characterized by trust and transparency, which was in line with previous findings by Fink (2016). Firstly, by focusing on teachers' commitment to educational development, the principal prioritized an open and transparent organizational culture to encourage team spirit and trust: *'I think what my team needs from me is concern and trust and response. But specifically trust, I need to be very confident and transparent.'* Secondly, nine out of 11 teachers also reported that an open and respectful organizational culture was an important factor in collectively resolving educational problems, sharing knowledge, creating shared meaning, and participating in leadership, as well as ensuring acceptance of one another. The teachers regarded such a culture as

crucial for taking the initiative and sharing expertise, which they said required a sense of security. Jenna [9] and Lynn [8] also highlighted the importance of respect for each other as professionals, though they linked their answers to previous negative experiences in other schools that lacked an openness and in which they had experienced hierarchical leadership. Jenna and Lynn specifically referred to the principal's role in relation to their strong need to be listened to.

Therefore, in discussing how inquiry-based working and actively participating in leadership related to realizing educational change as a team, the team members and the principal acknowledged that both leadership distribution and inquiry-based working played an important role in strengthening their contributions to change. Educational changes were said to be based on data and teachers' inquiry habit of mind and specific expertise, which reinforced the teachers' feelings of efficacy and confidence and encouraged them to take the initiative and assume responsibility to *'be the best teachers and realize the best education for our pupils'* [Fay [4]).

## Discussion

Previous studies have noted a positive relationship between inquiry-based working and distributed leadership on teachers' change capacity (Brown et al., 2017; Datnow & Hubbard, 2016; Deppeler & Ainscow, 2016; Klar et al., 2016; Schildkamp, 2019; Uiterwijk-Luijk et al., 2017). The present study explored how teachers and the school principal perceived this relationship and analyzed whether the relationships were meaningful in their day-to-day practices. The respondents explained how data, and their curiosity, which they assumed to be inherent to inquiry-based working, guided them in relation to changes that needed to be made. In turn, inquiry-based working generated a feeling of security that encouraged the respondents to take the initiative and assume responsibility when realizing educational change both in the classroom and at the school level. Moreover, the teachers reported the need to be involved in leadership and inquiry-based working and described how change was part of their work and undertaking changes together was appropriate. Such viewpoints appear to be conditional on the teachers' commitment to their school's goals and school development. In addition, the ability to be involved in leadership appeared to have a reinforcing effect on the teachers' sense of professional efficacy and job satisfaction, which was line with the findings of Lauermaann and Karabenick (2013). These researchers found that teachers with a strong sense of professional efficacy were more open to new ideas to effectively meeting students' needs.

The teachers' and principal's perceptions of inquiry-based working were in line with the findings of Marsh and Farrell (2015) and Uiterwijk-Luijk et al. (2017) in relation to teachers' inclination to systematically collect and analyze various types of data to improve performance at both the classroom and school level. In addition, in general, their perceptions of distributed leadership were in line with the concept proposed in the present study. The team members who were best-equipped to achieve a particular goal were free to take on leadership roles, which meant that teachers' expertise was employed, responsibility was shared, and decisions were made collectively (Binkhorst et al., 2018; Harris, 2014; Spillane, 2012a). Previous research has indicated that teachers' years of experience and their education level may be relevant to inquiry-based working,

distributed leadership (e.g. Kocór & Worek, 2017), and realizing educational change (Bellei et al., 2016). Therefore, these variables were incorporated in the present study. However, as only 12 teachers were interviewed in the present study, no conclusions were drawn based on these variables. Therefore, whether years of experience and educational level are related to the three constructs should be handled carefully.

For the principal, a committed team was essential to realizing educational change, which in turn prompted her to encourage the teachers to take the initiative, assume responsibility, and participate in decision-making at the school level. This finding was in line with prior research by Pineda-Báez et al. (2019), Szeto and Cheng (2018), Moin (2018), Delegach et al. (2017), and Moin (2018) found that teachers who were committed to their schools had a strong belief in and acceptance of their school's vision of educational change. Delegach et al. (2017) also noted that committed teachers were more likely to initiate and realize educational change and observed that inviting teachers to use their expertise could reinforce their commitment. The best-equipped team member should be in charge of realizing any particular educational aim (Spillane, 2012a). The principal also encouraged the teachers to engage in inquiry-based working and make use of data. Inquiry-based working appeared to be helpful for making sense of information, while curiosity, asking questions, and gathering data could substantiate new knowledge and beliefs. In the present study, the teachers' and principal's perceptions were found to be congruent. Such congruence may enhance the teachers' sense of efficacy, as Ham et al. (2015) showed that congruence in the approach of principals and teachers to leadership was positively related to teacher self-efficacy. The same authors also found that congruence in perceptions was an important aspect of a school's capacity to change.

A difference was noted in the teachers' and principal's focus on taking the initiative and assuming responsibility, using teachers' expertise, and the relevance of inquiry-based working. While the teachers were focused on their day-to-day practices in the classroom, the principal was focused on educational development at the school level. This difference may be explained as follows: principals invest in committed teams because committed teachers are more likely to initiate and realize educational changes that better meet students' needs. Appealing to teachers' expertise can reinforce their commitment (Delegach et al., 2017). Therefore, the principal encouraged the teachers to participate in decision-making at the school level, as well as to use their expertise and take the initiative. Meanwhile, as her emphasis was on making improvements at the school level, she concentrated on creating an inquiry-based working culture by encouraging teachers to adopt an inquiry habit of mind to satisfy their eagerness to learn (Uiterwijk-Luijk et al., 2017). In short, the principal's focus reflected her role as a formal leader who was accountable for the school's overall educational quality. Furthermore, although the teachers were likely to share new knowledge with their colleagues, their perspectives appeared to strongly reflect their individual curiosity. In addition, the teachers sought to use their specific expertise and aim for certain goals both in their day-to-day teaching practices and at the school level. For this reason, the teachers made frequent reference to their daily teaching practices and responsibilities in the classroom. These aspects, as well as students' well-being and educational results, were the teachers' first priority. As such, the differences in focus between the teachers and the principal were reasonable.

The results confirmed that an open, transparent, and trusting organizational culture was crucial to encouraging teachers to take the initiative, share knowledge through



inquiry-based working, collaborate, and realize change. Such a culture made the teachers feel appreciated, which was essential to their comfort in stepping forward, exploring, and learning collectively. These findings were in line with prior research by Fink (2016) and Ross et al. (2016), who noted that employees express a need to trust their colleagues and work collaboratively. In addition, congruency was found in the present study, as the principal recognized the teachers' need for trust and transparency and acknowledged that her role and behavior were essential to creating and stimulating such an organizational culture. This was in line with findings by Fink (2016), who observed that trust was strongly connected with teachers' and schools' performance.

## Conclusion

The present work provides deeper insights into teachers' and their principal's perceptions of distributed leadership and inquiry-based working, particularly in relation to the realization of educational change. The teachers' enthusiasm when discussing how inquiry-based working empowered them and encouraged them to use their expertise and take the initiative was striking. The teachers frequently mentioned their desire to be a good teacher for their students and to perform well at work. Nurturing this enthusiasm and professional commitment is important for school leaders. One way of doing so, as illustrated by the school leader, would be to express confidence in and focus on the team's abilities and expertise, as well as encouraging teachers to be curious and adopt an inquiring attitude.

This study pertains to a Dutch context in which schools are largely autonomous. In many countries, including the Netherlands, educational systems reflect a governmental mandate of risk-based control. Such approaches could be a concern, though they do not necessarily prevent schools from allowing teachers to take the initiative, accept greater responsibility, or encourage inquiry-based working, all of which appear to be vital in ensuring that teachers contribute to educational change. Both teachers and school leaders are advised to leverage other factors to better meet teachers' needs, particularly the provision of space, support, transparency, and trust.

## Note

1. Number between brackets are teachers' years of experience

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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## Appendix A. Interview questions

1. Inquiry-based working
  - a. Are you collectively as a team working in an inquiry-based way? Please illustrate with examples.
  - b. If so, why are you working in this way? To what extent is this relevant to you?
  - c. Is inquiry-based working important to you, and if so, why?
2. Changes in daily practices

The results of the questionnaire show that if teachers work in an inquiry-based way, they might feel more comfortable in handling changes and take initiatives to improve their teaching. Do you recognize this relationship, and how do you perceive the relationship?
3. Distributed leadership
  - a. To what extent is the ability to take initiatives and responsibility essential in your work?
  - b. How do you perceive the ability to take initiatives and responsibility as being related to realizing educational change?
4. The relationship between inquiry-based working, distributed leadership, and realizing educational change
  - a. The results of the questionnaire show that there is a positive connection between inquiry-based working, the extent to which teachers can take initiatives and responsibility, grant one another permission to take such roles based on their expertise and participate in decision making processes, and the realization of educational change at the classroom and the school level. How do you perceive these connections?
  - b. Are inquiry-based working, the extent to which you can take initiatives and responsibility, grant one another permission to take such roles based on one another's expertise and your participation in decision making processes relevant in your daily practices and realizing change collectively? If so, how do these aspects and their connections influence your daily practices, both individually and collectively as a team?

With regard to the school leaders' interview, the final question (4 c) was adapted to How do you encourage teachers to be involved in educational development? Why do you do this?