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The hullabaloo of schooling: the influence of school factors on the (dis)continuation of lesson study

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ABSTRACT

This study examines which school factors schools report influence their (dis)continuation of lesson study, a professional development initiative, and how after a four-year, cross-school lesson study project ends. To examine this, the framework on three types of school factors (features of employment, malleable school processes and fixed school characteristics) and the concept of organisational routines are used. Semistructured interviews were held with 21 teachers and 15 school leaders from the 14 schools who participated in the project. Findings show schools reported nine school factors that influenced their (dis)continuation of lesson study after the project: five features of employment (part-time appointment, turnover, (un)planned leave of absence, work location and beginning teachers), three malleable processes (policies on improvement, scheduling and school finances), and one fixed school characteristic (school size). School factors were reported to constrain schools from making lesson study a repeated practice in the school, performing its core features, and ensuring collective attendance. Two narrative portraits revealed that the simultaneous occurrence of school factors made continuing with lesson study especially complex and limited schools' ability to move beyond shortened and simplified initiatives to more rich and meaningful professional development.

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Lesson study; organisational routines; school factors; professional development; implementation

Introduction

Although research shows that professional development (PD) initiatives that are active, coherent, collaborative and school-based best support teacher learning (Desimone 2009), these types of initiatives tend to have an impermanent and fleeting nature (Bryk 2015; Hubers 2020). Indeed, initiatives that reinforce the existing 'grammar of schooling' are more likely to succeed, and more innovative initiatives that challenge the grammar of schooling often have only localised or temporary success (Tyack and Tobin 1994). These types of initiatives are often discontinued in schools when a project – and its funding – ends or continues in shortened and simplified versions (Hargreaves and Goodson 2006). Researchers have argued that the short-lived and simplified forms of PD initiatives common in schools stem in part from the failure to consider how learning is embedded –

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that is, how it is taken up in and influenced by the school context (Kennedy 2010; Opfer and Pedder 2011; Van Driel et al. 2012). Therefore, scholars have called for research on teacher learning that focuses not only on individual teachers and PD programmes but also on how PD is taken up in and influenced by the school context (Bryk 2015; Opfer and Pedder 2011).

Studies suggest examining PD through the lens of organisational routines as a useful way to explore initiatives in the school context (Spillane 2012). In general, organisational routines refer to repeated, recognisable patterns of interdependent actions, carried out by multiple actors (Feldman and Pentland 2003). Examining PD through the lens of organisational routines concentrates on what actually happens regarding the initiative (Spillane 2012). It focuses attention on how new initiatives are created, maintained, and developed in schools (Wolthuis et al. 2020b).

While some studies view the concept of organisational routines as useful to examine how PD initiatives are taken up in schools, they often overlook the influence of the wider school context. Specifically, researchers have 'ignore[d] fundamental organizational attributes that exist above the level of the routine' (Parmigiani and Howard-Grenville 2011, 443). This lack of attention to the wider school factors aligns more broadly with PD research. For example, research shows that school size, part- or full-time appointment and PD policy and scheduling all influence how PD initiatives unfold (Akiba 2016; DeMatthews 2014; Organisation for Economic Co-operation and Development [OECD], 2020). However, in much of the research these school factors are not explored (Bannister 2018; Kennedy 2010; Van Driel et al. 2012). When studies do discuss school factors, they frequently treat these factors superficially or very generally. For example, high-quality research dedicated to Professional Learning Communities (PLCs) (e.g. Stoll et al. 2006) identifies inhibiting and promoting school factors. However, the authors present results as a list of general factors that are important, hardly discussing why these factors might be important or how they shape PD in schools. To fill this research gap, we aim to explore which school factors influence how a PD initiative is taken up in schools after a PD project ends. As these factors are rarely comprehensively examined in PD research, we apply a framework of school factors from Viano et al. (2020) from the context of teachers' employment decisions and adapt it to the context of PD. This framework is chosen because it specifically focuses on the organisation of the work in schools. By contrast, other frameworks found in PD research that focus on the school organisation often also focus on cultural or political dimensions or focus on factors that lie beyond the school itself. For example, Coburn & Turner (2011) consider norms and power relations and Stoll et al. (2006) also investigate a schools' external influences and local and broader community. Although these aspects are all relevant, they are not the focus of this study. School factors, within the framework of Viano et al. (2020) can be divided into three types: (1) features of employment and (2) malleable school processes, (3) and fixed school characteristics (Viano et al. 2020).

The PD initiative we focus on is lesson study, a form of teacher inquiry that originated in Japan in which teachers go through a research cycle to examine their own teaching practice (Lewis, Perry, and Hurd 2009). The research cycle contains different phases: goal setting, planning and conducting a research lesson, conducting a post-lesson discussion and reflecting on the entire lesson study process (Fujii 2014; Lewis and Perry 2017).

Lesson study is an innovative PD initiative that requires schools to re-examine their existing organisational structures and work on reforming their context to support it (Akiba & Wilkinson, 2016). That is, lesson study can support teacher and student learning in various contexts (Cajkler et al. 2015; Lewis and Perry 2017), but in practice, it is often short-lived or simplified (Akiba 2016; Wolthuis et al. 2020b). In this regard, lesson study mirrors the challenges of other PD initiatives with effective design features: while they can potentially support teacher and student learning, these types of innovative PD initiatives are difficult to sustain in schools (Hargreaves and Goodson 2006; Hubers et al. 2017).

Schools in our study were part of a cross-school professional learning network (PLN). PLNs are generally defined ‘as any group who engage in collaborative learning with others outside of their everyday community of practice, in order to improve teaching and learning in their school(s) and/or the school system more widely’ (Poortman and Brown 2018, 1). The PLN was set-up for participants to work with lesson study (LSPLN).

Research has shown that both participants and the design features can influence lesson study initiatives (Lewis, Perry, and Hurd 2009), but in general, few studies have examined the influence of the school context, particularly the school factors. Our research is not meant to show that school factors are decisive, as other aspects also play a role; instead, we aim to explore whether and how school factors influence the (dis)continuation of lesson study in each of the 14 schools after the cross-school LSPLN ended.

Theoretical framework

Lesson study through the lens of organisational routines

We operationalised organisational routines to examine the (dis)continuation of lesson study in schools after the LSPLN ended, which means that the three elements of its definition are central to this study: repeated, recognisable patterns of interdependent actions, and multiple actions. Because schools were part of a cross-school initiative in which lesson study was organised at an external location for four years, the continuation of lesson study involves shifting from a cross-school to a school-based initiative. This means that there are some prerequisites schools must decide on or arrange before they can continue with lesson study as a school-based organisational routine. We incorporate these prerequisites to the continuation of lesson study (see Table 1). Next, we describe how each element adds to our investigation of the (dis)continuation of lesson study in the 14 schools after the LSPLN ended.

Table 1. Operationalisation organisational routines lens to lesson study.

Organisational routine	Operationalisation
Repeated	<ul style="list-style-type: none"> ● Schools decide to repeat lesson study in their own setting after the LSPLN ends. ● Schools have plans to repeat lesson study the next year with the pilot groups and potentially to form more groups.
Recognisable pattern of interdependent actions	<ul style="list-style-type: none"> ● Schools plan meetings with sufficient time for lesson study. ● Schools continue with the core features of the research cycle.
Multiple actors	<ul style="list-style-type: none"> ● Schools gather participants for lesson study groups in their own schools. ● Schools have collective participation during lesson study meetings.

Regarding *repeating* lesson study, after the LSPLN ends, the goal was for lesson study to become a repeated practice within the 14 participating schools. However, this element of an organisational routines captures the aim to sustain the lesson study practice beyond the LSPLN in the 14 individual schools. The LSPLN was set-up to enable teachers to introduce and organise lesson study as a repeated practice with their own colleagues in their own schools. During the LSPLN, schools were advised to start with one or a few pilot groups and, after they were established, explore spreading the initiative through the school (De Vries, Verhoef, and Goei 2016). Repeating lesson study in our context refers to (1) whether schools repeated lesson study in their own school after the LSPLN ended and, if they did, (2) whether schools (intended to) repeat lesson study the following year with the pilot group and/or select more groups for lesson study.

The *recognisable patterns of interdependent actions* pertain to the phases of the research cycle as they unfold in schools. How the cycle needs to unfold is a contested issue as discussions on essential nature and core elements of lesson study remain ongoing (see Wood, 2018). While some researchers defend variations of lesson study (for example, Durden, 2018), others are less lenient and prescribe a specific format that needs to be followed. For example, Takahashi and McDougal (2016) argue for the essential presence of a knowledgeable other, while some lesson study users and research papers do not include a repeat lesson as it is not always possible to do so.

We take a local adaptation approach to the continuation of lesson study. Teachers can adapt the cycle as long as its core features are maintained (Wolthuis et al. 2020b). In our context, core features are distilled from the Dutch model of lesson study teachers worked with during the LSPLN, which was based on both the American adaptation by Stepanek et al. (2006) and the British adaptation by Dudley (2011) which contains case pupils. As this version of lesson study was both used and taught during the LSPLN to teachers as a form of teacher research, the phases that distinguish lesson study as a research process need to be preserved. Adaptable features in our context are input by a knowledgeable other, studying curriculum material and guidance by facilitator, and repeating and re-discussing the research lesson (Wolthuis et al. 2020b). These elements are considered adaptable for our context, as the Netherlands has no national curriculum and teachers can decide what and how to teach as long as they teach towards Core Curriculum Standards (Nieveen & Kuiper, 2012). Because of this, the Dutch model holds less tightly to studying of curriculum material (*kyouzai kenkyuu*). Regarding the knowledgeable other, during the LSPLN, teachers were assisted by two subject pedagogical experts. Although these experts were available for consultation upon request after the LSPLN ended, they were no longer formally involved. In the Dutch model, the importance lies on connecting teachers' own knowledge to external knowledge (Goei et al. 2021). External knowledge can come from another person (pedagogical expert) but can also come from books, articles, videos or any other source that proves new knowledge. Repeating lesson study is considered an essential feature. Within the Dutch model, lesson study is considered an iterative, cyclic process. Lesson study is not a practice to be done once, but is considered something that builds up. When teachers conduct a lesson study cycle this raises new questions for a next cycle. In this way, teacher continue to learn and continue to examine and understand student learning. The cyclic nature of lesson study is for example, seen as one of lesson study's five big ideas that capture the essentials in lesson study (Goei et al. 2021).

The six phases of Dutch model of the research cycle involve (1) picking a research theme; (2) planning a research lesson; (3) teaching or observing the research lesson; (4) discussing the research lesson; (5) revising, reteaching, and rediscussing the research lesson; and (6) reflecting on the lesson study experience (De Vries, Verhoef, and Goei 2016). Phase 1, 2, 3,4 are all core phases of the Dutch model of lesson study (Wolthuis et al. 2020b). The cycle requires sufficient time. For example, the Dutch model recommends 20 hours per cycle, which requires that sufficient time be scheduled for teachers to go through each phase of the research cycle (De Vries, Verhoef, and Goei 2016). As such, to identify recognisable patterns of interdependent actions, we examine two aspects: (1) whether schools were able to plan meetings of sufficient time and (2) whether the core features of the research cycle could be continued.

Regarding *multiple actors*, we examine two aspects in particular. Because the LSPLN was a cross-school initiative during which one or two departmental colleagues from each school formed groups with teachers from other schools, the first step for schools that continued was to gather participants for lesson study among their own staff. Second, after a group is formed, it is important that all participants are present during the research cycle, as lesson study is fundamentally a collaborative process (De Vries, Verhoef, and Goei 2016; Takahashi and McDougal 2016). As such, to determine if multiple actors were involved, we examine whether and how (1) schools gathered teachers to form lesson study groups after the LSPLN and (2) teachers engaged in collective participation during the research cycle.

School factors

In general, school factors involve factors at the school level, such as type of school, school size, student–teacher ratio, students per class and teacher gender. Applied to our context, they relate to the organisation of work in schools, not specifically to the organisation of PD. They constitute the working context of the school in which the PD is implemented. School factors are a broad notion, and depending on the aim of their study, researchers have distinguished various types of school factors. For example, Fuller (1987), examining which school factors raise achievement, classifies school factors into school expenditures, school material inputs (e.g. class size, instruction material, science laboratories), teacher quality (e.g. teachers’ level of schooling and experience), teaching practices (e.g. homework frequency, time spent on class preparation) and school management (e.g. quality of principal, student repetition of grade). In contrast, Vanlaar et al. (2016)

examine school factors related to achievement in student groups and thus focus on collaboration, resources, community and partnership amongst others. As such, depending on the focus of the research, different (types of) school factors will be relevant. For our study, we use and adapt Viano et al.’s (2020) theoretical framework of school factors. They focus on how the work in schools is organised and distinguish three types of school factors: (1) features of employment, (2) malleable school processes, and (3) fixed school characteristics. Next, we discuss what each of these factors entails and what we know about them in the contexts of lesson study and PD.

Features of employment involve the specific organisational arrangement of the school staff. These arrangements can be ‘subject to regulations and are likely applied to all schools managed by the same organisation (e.g. all schools in the same school district)’

(Viano et al. 2020, 5). No research to our knowledge identifies relevant features of employment for lesson study, though OECD (2020) more broadly indicates that teachers' working hours (full- or part-time) influence engagement in PD. This study shows that part-time teachers are less likely to participate in PD and score lower on the index of professional collaboration than full-time teachers (OECD 2020). The Netherlands, the context of this study, has one of the highest numbers of part-time working teachers worldwide: Whereas in Japan, the United States, and England only 10%, 6% and 18% of teachers work part-time, respectively, in the Netherlands 58% of teachers work part-time (OECD 2020).

In addition, PD research suggests that other, non-structural features of employment such as turnover influence how PD unfolds in schools (Guin 2004). Studies report that teacher and administrator turnover is a reason schools struggle to maintain new initiatives (Klingner, Boardman, and McMaster 2013). For example, the sustainability of PLC initiatives is vulnerable to teacher turnover or when key leaders leave (Hargreaves 2007). In the Netherlands, turnover numbers are somewhat difficult to determine, partly because not all studies examine the same groups of teachers and various definitions of 'teacher attrition/retention' are used (Kelchtermans 2017). Overall, research reports that 25% of beginning teachers in the Netherlands leave their first teaching job within five years (Helms-Lorenz, van de Grift, and Maulana 2016). In general, turnover is a relevant school factor. If, for example, teachers or school leaders well-versed in a new initiative leave education or move to another school, the new project may struggle to continue. Given that research shows the importance of non-structural features of employment for PD initiatives, we also examine these features in terms of whether and how lesson study is continued in schools. Features of employment, in our context, thus refer to issues, aspects and arrangements that relate to staff's appointment.

Malleable school processes refer to the processes 'for which the locus of control is expected to be within the school and under the control of school administrators. Malleable factors can be changed by school administrators in the short term' (Viano et al. 2020). Regarding lesson study, PD policy and scheduling are important malleable processes in determining whether and how schools implement lesson study (Akiba 2016; Akiba & Wilkinson, 2016). For example, Akiba and Wilkinson (2016) show that offering multiple PD options (the 'cafeteria approach') leads to shortened and simplified versions of lesson study. In Dutch schools, PD policy and the way schools arrange their PD activities are largely under the control of school boards (Inspectorate of Education, 2013). Assessment from inspection (Inspectorate of Education [Inspectie van het Onderwijs] 2013) reveals that half the secondary school boards in the Netherlands do not systematically steer PD activities and do not have clear norms for what is expected in terms of teacher PD.

Regarding scheduling, timetables that incorporate teacher learning, rather than prioritise instruction time, support the continuation of lesson study. For example, in the United States, lesson study was shortened from a two-month to a two- to four-day initiative as a result of teachers' work schedules, which did not allow time for ongoing professional learning activities (Akiba 2016). In the Netherlands, teachers in some schools rarely find time to engage in PD, whereas in other schools, they do (Inspectorate of Education 2018).

Fixed school characteristics involve the 'less readily altered features that can only be changed over a longer time' (Viano et al., p. 5). Regarding lesson study, not much is

known about the influence of fixed school characteristics, though PD research more broadly indicates that school size influences how PD unfolds in school (DeMatthews 2014). School size influences PD as physical proximity gives more opportunities for unplanned encounters, which in turn contributes to school improvement (Shirrell and Spillane 2019). As such, we aim to explore and identify which fixed school characteristics school report influenced their (dis)continuation of lesson study.

In addition, an important finding of Kennedy (2010) is that a multitude of simultaneously occurring factors influence teachers' ability to implement reform ideas in their classroom. To obtain a comprehensive view of the influence of school factors on lesson study, we therefore also examine whether and how their simultaneity influences the (dis)continuation of lesson study.

In summary, the preceding discussion shows that with regard to school factors, both PD research in general and lesson study research in particular have identified some relevant aspects. However, no detailed examination exists of which school factors influence PD and how. We aim to investigate this topic more closely. Our research is guided by the following research question: Which simultaneously occurring school factors influence the continuation of lesson study in schools after the LSPLN project ends, and how do they do so?

Method

Background of study

Fourteen secondary schools located in the north of the Netherlands participated in two LSPLNs: one for maths and one for Dutch language. The LSPLNs continued for four years (2014–2017) and were part of a pilot project for (cross-school) PLNs launched by the Dutch Ministry of Education (De Vries and Prenger 2017). Teachers participated in six lesson study cycles. The LSPLNs were set up to develop teacher learning, prepare teachers to become lesson study facilitators and introduce lesson study at their own schools. To enable schools to continue with lesson study, meetings were organised for school leaders from the respective schools to update and inform them about the lesson study progress. In addition, closing conferences were held at the end of each LSPLN year

Table 2. Characteristics of the 14 case study schools.

School	Pupils	Interviews (N)	
		School/team leaders	Teachers
Greenfield	1,247	1	1
Park West	281	2	3
Bakersfield	1,361	1	1
Mayfair	305	1	1
Wisteria	1,111	1	1
Adams	920	1	3
Franklin	1,100	1	2
Oak Grove	1,183	1	1
Palmdale	1,381	2	2
Evergreen	1,163	1	2
Silver Oak	1,400	1	1
Inglewood	1,004	0	1
Glendale	2,051	1	1
Pine Hill	1,775	1	1

at which lesson study teams presented their findings to colleagues and school leadership. After four years, the LSPLN ended, and university support and funding were withdrawn.

Data collection

Between 2017 and 2018, we performed semistructured, open-ended interviews with 21 teachers (former LSPLN participants) and 15 school leaders from 14 different schools (for an overview of the school characteristics, see [Table 2](#)). All interviewees gave informed consent to the use of the interview data for research. In general, questions focus on whether and how lesson study was organised after the LSPLN and which school factors influenced this organisation. Examples of interview questions were as follows: ‘How is lesson study currently organised in your school?’ ‘What makes it easy or difficult to continue with lesson study in your school?’ and ‘What influenced your discontinuation of lesson study?’ We asked follow-up questions about the school factors teachers and school leaders experienced as relevant for the (dis)continuation of lesson study. Interviews were audio-recorded.

Data analysis

The interviews were transcribed verbatim. We first examined which schools continued and which schools did not continue with lesson study. Of the 14 schools that participated in the LSPLN, five schools reported that they had not continued with lesson study in their own schools after the project ended. They had stopped altogether and had no plans to resume the practice. Nine schools reported that they continued with lesson study in their own schools, but did so in varying degrees of intensity. For example, in a school that continued with lesson study one former LSPLN teacher could have finished with their first cycle after the LSPLN ended while another former LSPLN teachers in the school would not have had a first meeting yet and was still recruiting colleagues or planning meetings. As we interviewed the schools between 6 and 8 months after the end of the project, we only report on whether and how schools continued at this point in time after the LSPLN project ended. To determine which school factors were reported to influence the (dis)continuation of lesson study, first we examined teachers’ and school leaders’ transcripts and created summaries for each school. We explored the transcripts using the three types of school factors from our theoretical framework (features of employment, malleable school processes and fixed school characteristics) and the examples of specific school factors found in lesson study and PD literature (part-time employment, turnover, PD policy, scheduling and school size). We considered that features of employment constituted a factor when these features pertained to issues and arrangements regarding appointment of staff. As described previously, we explored both structural (e.g. work hours) and non-structural (e.g. turnover) employment features. We identified a school factor as a malleable process if it involved processes under the school’s or school leadership’s control, and we regarded school factors as fixed school characteristics if they involved more or less permanent features of the school.

Second, we examined how school factors were reported to influence whether schools (dis)continued with lesson study. We used the concept of organisational routines (a repeated, recognisable pattern of interdependent actions, carried out by multiple actors)

Table 3. Analytical tool (based on Rodríguez-Dorans and Jacobs 2020).

Codes	Helps illustrate	Key words: What we looked for
Characters	Who – Important characters, relationships between characters	Names, pronouns, experiences or events involving other people
Time	When – sequence of the story, experience of time	Dates, conjunctions of time (after, before, when), periods (weeks, months, days).
Space	Where – organisational context	The school site, but also the states of mind of the people involved
Key events	How/why – connections and relationships, interactions, turning points, wider influences	Link to important decisions made regarding implementation of lesson study, link to development and performance of lesson study in the school
Phenomena of interest	How/why – how the phenomena of interest are narrated, experienced	Influence of school factors on the implementation and performance of lesson study. The school factors identified were (1) staff appointment, (2) turnover, (3) other routines in the school, (4) the organisation of scheduling, (5) school finances and (6) school size

to examine the influence of school factors on schools' continuation of lesson study. Regarding repeating, we examined what schools reported about the influence of school factors on (1) repeating lesson study in their own school after the LSPLN ended and (2) whether pilot groups would repeat the cycle the following year and schools' plans to form more lesson study groups. Regarding the recognisable patterns of interdependent actions, we examined the influence of school factors on (1) planning meetings with sufficient time and (2) the continuation of core features of the research cycle. Regarding the multiple actors, we examined the influence of school factors on (1) gathering teachers to form lesson study groups after the LSPLN and (2) the collective participation during meetings. All relevant sections regarding school factors were selected.

Finally, we examined the influence of the simultaneity of school factors, using the narrative portraiture method. This method allows the contextualisation of the process and offers a way to present the simultaneity of the school factors, as it gives an in-depth account of what happened when, where and with whom (Rodríguez-Dorans and Jacobs 2020). Because reporting on all 14 schools would be too extensive, we selected two key school sites to portray the influence of the simultaneity of school factors on the (dis) continuation of lesson study: one school that continued with lesson study and one that did not. We chose the schools in which interviewees were most explicit about and expansive on the influence of the simultaneity of the school factors to best draw out the schools' narratives. We used an analytical tool to aid the process (see Table 3), focusing on the characters (teachers and school leaders), time (from the start of the LSPLN to the time of interview), space (school organisation and people's experiences),

Table 4. Overview of reported influential school factors.

Type of school factor	Specific school factor	Number of schools reporting its influence
Employment characteristics	Part-time appointment	12
	Turnover	8
	(Un)Planned leave of absence	3
	Work location	3
	Beginning teachers	2
Malleable school characteristics	Policy on school improvement	11
	Scheduling	8
	School finance	3
Fixed school characteristic	School size	2

key events (decisions on whether and how to continue with lesson study) and the phenomena of interest (the interaction between the school factors) to understand how various school factors operated within the school context. Applied to our context, we investigated the teachers' and school leaders' experiences of the influence of school factors on the (dis)continuation of lesson study. We examined the key words in the interviews and drew up narratives by using the time codes found in the transcripts.

Results

In total, nine school factors appeared to influence the (dis)continuation of lesson study after the LSPLN ended (for an overview, see [Table 4](#)). Of the three types of school factors (Viano et al. 2020), features of employment and malleable processes were most frequently reported. In most cases, schools reported that the specific school factors constrained rather than promoted the continuation of lesson study. In the next section, we describe the influence of each school factor in more detail.

Employment characteristics

Five different employment characteristics were reported by schools to influence their continuation of lesson study. These were (1) part-time employment, which 12 schools reported, (2) turnover, which eight schools reported, (3) (un)planned leave of absence, which three schools reported, (4) work location, which three schools reported, and (5) beginning teachers, which two schools reported.

Part-time employment

Part-time employment was the most frequently reported school factor and is, as mentioned, a specific feature of the Dutch teaching culture. Schools reported that part-time employment considerably constrained continuing with lesson study in various ways. All five schools that discontinued with lesson study reported that due to many part-time working teachers there was no time during the week when all teachers from a prospective lesson study group were present at the school. Therefore, there was no moment available to plan lesson study (*recognisable pattern of interdependent actions*). Because part-time teachers also had fewer hours within their workload to spend on PD activities, lesson study could also be too time-intensive to add to their workload, and schools could not gather these prospective teachers for a group (*multiple actors*).

Schools that did continue with lesson study also struggled with the part-time teachers (Park West, Bakersfield, Mayfair, Adams, Franklin, Palmdale and Glendale). The more part-time teachers a lesson study group had, the less schedules tended to align, making it difficult to plan meetings with enough time to go through each phase of the research cycle (*recognisable patterns of interdependent actions*). As one teacher explained: 'It is such a disadvantage when you have part-timers. For example, I am a very complicated part-timer. I only work three mornings a week. I think this is a big obstacle' (B4). Accommodating everyone's specific working hours led to shorter meetings, which challenged groups' ability to maintain the core features of the research cycle (*recognisable patterns of interdependent actions*). Misaligned schedules of part-timers often meant compromises were made regarding full attendance (*multiple actors*), which constrained

the collaborative nature of the lesson study routine. For example, as one teacher explained, 'In the week that the one of the research lessons was given, [I] did not attend one of the research lessons because I did not work on that day' (D2).

Turnover

Turnover of people acquainted with the LSPLN led to a loss of expertise on and enthusiasm for lesson study. It destabilised repeating the practice as new people with new agendas came in (*repeated*). Turnover led to discontinuation of lesson study or constrained repeating the practice. For example, in Pine Hill, one of the two teachers who participated in the LSPLN had left. The other LSPLN teacher explained she did not feel up to the challenge of repeating lesson study alone which meant lesson study was discontinued.

When schools did continue with lesson study, turnover of leadership constrained repeating lesson study for the following year. For example, one teacher reported: 'I had to have the discussion of the two research lessons separately with two people because they could not be present at the time because they had obligations at other locations. It [lesson study] is only taken up [in the schedule] at our location, not at the other location' (D3). New leaders were rarely engaged in ensuring that new lesson study groups would start. New school leaders were often not acquainted with lesson study, which often resulted in a lack of commitment and threatened repeating lesson study for the following year (*repeated*).

(Un)Planned leave of absence

Schools also reported a variety of (un)planned leaves of absence, namely sabbatical, maternity leave and illness. Regarding maternity leave, teachers in the Netherlands are legally entitled to at least 16 weeks of paid maternity leave. In all cases, (un)planned leave of absence constrained repeating lesson study, either it was discontinued or postponed or done on a smaller scale (*repeated*). For example, Wisteria reported that their former LSPLN teachers went on maternity leave just when the project ended, which meant no facilitators were present to repeat lesson study in the school after the LSPLN, which contributed to their discontinuation of lesson study. In addition, Franklin started with one pilot team instead of two, as one of its two facilitators was away on sabbatical for half a year and was unavailable to facilitate a pilot group in the school. (The school planned for him to facilitate a group when he returned.) When colleagues who were potential participants were absent, respondents reported finding it difficult to gather or maintain enough colleagues to form a group (*multiple actors*). For example, in Palmdale, the former LSPLN teacher explained her difficulty in gathering colleagues: 'One teacher was just ill. Not work related, but just ill. So, she was not in school for half a year and could not join [lesson study]' (G2). Similarly, at Franklin, several colleagues' illnesses reduced the lesson study group from seven to five participants.

Work location

Three schools (Park West, Adams and Palmdale) reported teachers' different work locations constrained their ability to have all participants present during the research cycle (*multiple actors*). Because other locations had different times allocated to PD or school improvement, teachers working at different locations would have lessons scheduled when the other teachers in the group would have time for PD. To work

around these misaligned schedules, oftentimes the choice was made to compromise on complete attendance (*multiple actors*). For example, one teacher reported: ‘I had to have the discussion of the two research lessons separately with two people because they could not be present at the time because they had obligations at other locations. It [lesson study] is only taken up [in the schedule] at our location, not at the other location’ (D3).

Beginning teachers

Beginning teachers were reported to influence gathering participants for lesson study groups (*multiple actors*). However, beginning teachers were reported to be both a promoting and an inhibiting factor. For example, at Pine Hill, beginning teachers were reported to have a high workload and little headspace to engage in activities beyond preparing and teaching their classes. Therefore, they discontinued lesson study because not enough prospective teachers were available to participate.

In Park West and Bakersfield, by contrast, beginning teachers were reported to influence the ease with which groups could be formed. In both schools, beginning teachers were enthusiastic, making them especially eager to form a lesson study group. For example, in Park West, the former LSPLN teacher had two beginning teachers in her department who immediately signed up for the lesson study group.

Malleable school characteristics

Schools reported three malleable school characteristics influenced continuing with lesson study. These were (1) policy on improvement, (2) scheduling, and (3) school finance.

Policy on improvement

Instead of policy on PD, schools reported that their policy on improvement was a more broadly influential school factor. Policy on improvement constrained continuing with lesson study as it was generally customary for schools to simultaneously plan multiple mandatory or voluntary initiatives, ranging in scope from individual to group to school-wide. Policy could be directed at other initiatives, which meant lesson study was either outcompeted by or had to compete with other initiatives or activities.

For example, school leaders from the four schools (Evergreen, Wisteria, Oak Grove and Silver Oak) that discontinued with lesson study explained that they already had chosen to explore another initiative for their staff and wanted to focus on that. Therefore, they decided not to repeat lesson study in their schools (*repeated*).

Seven schools (Park West, Bakersfield, Mayfair, Adams, Franklin, Palmdale, and Glendale) that did continue with lesson study reported that policy on improvement constrained repeating lesson study for the next year (*repeated*). In many schools, policy on improvement involved offering frequently, often yearly, changing initiatives, which made repeating lesson study for the next school year rather uncertain. For example, one teacher from Franklin reported, ‘Priorities can change every year. We often have not even made anything of them yet, and well, then a new priority appears all of a sudden because that is just how it is’ (E2). In addition, the policy on improvement made it difficult to have all participants present during the research cycle (*multiple actors*). Given that initiatives all had similar time slots, and teachers were often involved in multiple initiatives, they

had to choose which one to attend. This meant that teachers could, and sometimes did, favour other initiatives and did not show up for lesson study meetings. As one teacher explained:

Last year, for example, we had team meetings on Monday afternoon. Well, at that time I had also planned lesson study, which was fine. But then the team leader would add 'or teachers can work on innovation of a specific school track'. Well, then people had the choice: do you do lesson study or [do] you innovate? (G4)

Scheduling

Scheduling was another school factor that was reported to constrain continuing with lesson study. Eight schools reported that their schedules were already full with various activities and instruction time, making time for lesson study scarce. For example, one of the team leaders of the three schools (Wisteria, Oak Grove and Evergreen) that discontinued with lesson study explained: 'In the current educational system, the way we now run things at school it [lesson study] is not really possible' (G4). Another school leader echoed this sentiment: 'The schedules are full; the classrooms are full. Then it is just really difficult to say: we are going to plan an afternoon for lesson study. Because well, then I cannot get my lessons in [the schedule]' (K4).

In schools that did continue with lesson study, full schedules meant that lesson study needed to take place in a short time, as only brief meetings of approximately an hour could be planned, which in turn influenced groups' ability to maintain the core features of the cycle, which required more time. Therefore, groups did not always have sufficient time to, for example, explore the research problem or have a post-lesson discussion.

In two schools (Adams and Inglewood), scheduling influenced attendance (*multiple actors*). Given that instruction time was prioritised, teachers could not easily cancel or reschedule lessons, making it difficult to attend all lesson study meetings. For example, one teacher from Adams reported that she could not attend one of the research lessons because she had to teach her own classes.

School finances

School finances influenced schools' ability to continue with lesson study as a repeated, recognisable pattern of interdependent actions with multiple actors. For example, respondents from Wisteria reported that the shortage of finances influenced their decision not to repeat lesson study after the LSPLN ended (*repeated*). Their poor financial situation necessitated that they merge with another school which engendered a great deal of uncertainty for the staff. As a result, the school leader did not think it was a good idea to also introduce new initiatives to his staff.

Finances also influenced the continuation of the research cycle (*repeated recognisable patterns of interdependent actions*), as it was easier to plan meetings if there was money for lesson cancellations, ensuring that all participants could be present (*multiple actors*). For example, Adams had received project money that year and leadership decided to use it for lesson study. Thus, school leadership was able to plan regular meetings for groups as lesson cancellation or rescheduling was more affordable. However, as the project money was for one year only, repeating lesson study for the pilot groups for the

following year was uncertain (*repeated*). Conversely, at Glendale, the school was forced to cut costs for various reasons, one of which was that the school was in an area that experienced population shrinkage. Without money to cancel lessons, planning meetings for the research cycle (*repeated recognisable patterns of interdependent actions*) in which all teachers (*multiple actors*) were able to attend was difficult.

Fixed school characteristics

One fixed school characteristic was reported by two schools (Mayfair and Palmdale), namely school size.

School size

Mayfair and Palmdale illustrated that the larger the school, the more challenging lesson study's continuation was, particularly because in large schools, frequent, informal meetings were rare, making it difficult to gather enough people for a lesson study group (*multiple actors*). In Mayfair, the specific department in which the school leader and former LSPLN teacher worked was small (with 305 students), but the school contained other departments that were spread across three buildings. As the school leader explained: 'The people in those departments rarely see each other. Some sections only see each other three times a year. Well, that does not help a lot in creating demand and interest for doing lesson study together' (B9). The teacher in the school had managed to set up one lesson study group, but she stressed that with the different break times for each building, she rarely spoke to subject colleagues who worked at other locations. She had few opportunities to discuss and organise meetings for the research cycle (*recognisable patterns of interdependent action*). By contrast, Palmdale, as a small school, provided ample opportunities for informal contact, which contributed to the ease with which the former LSPLN teacher could gather participants for a lesson study group (*multiple actors*) and subsequently plan meetings for the research cycle (*recognisable patterns of interdependent actions*).

Two narrative portraits

The two narrative portraits in this section illustrate the influence of the simultaneity of school factors. The schools involved include Wisteria, which discontinued lesson study, and Adams, which continued with lesson study after the LSPLN ended.

Wisteria

One school leader (Rosanne) and one former LSPLN teacher (Judith) were interviewed from Wisteria. In Wisteria, five school factors (turnover, (un)planned leave of absence, school finances, policy on improvement, and scheduling) simultaneously influenced the discontinuation of lesson study. When the LSPLN started, two teachers from Wisteria took part. When one of them stopped halfway through the LSPLN, she was not replaced. As a result, the school had one fewer trained lesson study facilitator than planned, and Judith lacked the support of another LSPLN colleague. She explained, 'It would have been easier for me if I had had someone within the department who did this [lesson study]

with me. Or if there was a math group with whom I could brainstorm now and then' (C2).

At the same time, the other teacher who participated in the LSPLN went on maternity leave during the LSPLN, and her attendance was substituted by Judith. As noted previously, teachers in the Netherlands are legally entitled to at least 16 weeks of paid maternity leave, which meant that the former LSPLN teacher would not be working for at least four months. When Judith became pregnant at the end of the LSPLN, she also went on maternity leave, precisely at the moment when the LSPLN ended and lesson study could be continued at the school. During her absence, no one advocated for or started lesson study. Rosanne explained, 'Well, then it [lesson study] came to a complete halt . . . and that had to do with illness, turnover and changes of teachers. And then somebody was gone and then somebody came back. Well, then you do not have a consistent factor' (C1). During this time, school leadership decided to pursue another initiative. Judith explained, 'I was on maternity leave and then that decision was made without me' (C2).

Another factor that added to the decision to discontinue lesson study was scheduling. Judith explained, 'What we also ran into were the preconditions. That things might need to be altered in the schedule in order for there to be time to get together' (C2). Rosanne echoed this sentiment: 'The actual coming together during a lesson, teaching the lesson and then collectively meeting and adjusting the lesson and looking at the lesson again, that demands a lot time and space in the schedule. And well, that is a bottleneck' (C1).

Scheduling, therefore, influenced the discontinuation of lesson study. At the same time, both Rosanne and Judith explained that they were more enthusiastic about another initiative, which put much less pressure on the schedule and required fewer changes than lesson study. The school favoured continuing with that initiative instead of lesson study.

In addition, before and after the LSPLN ended, the school was engaged in a merger with another school due to finances. Rosanne explained, 'This brings great uncertainty on the work floor. I have learned that when people are uncertain about what will happen or what something means for their own position you should not put too many new things next to this. So, these things definitely have a relationship with each other' (C1). Judith concluded: 'So all in all, I think there was just too much hullabaloo (*gedoe*) in the school to go for it [lesson study]' (C2).

Adams

The director (Abigail) and three former LSPLN teachers (Hester, Erin, and Paul) were interviewed from Adams. At Adams, various simultaneously occurring school factors influenced the continuation of lesson study: teachers working part-time, teacher working at different locations, school finances and scheduling. Hester continued lesson study without all core features of the research cycle and without full attendance during meetings. Scheduling constrained planning lesson study meeting with sufficient time. In general, only one-hour meetings could be planned, which led Hester to worry about the quality of the first phases. She explained, 'Our research phase was quite short, because we are just pressed for time' (D2). She further noted that she did not have the time to explore the problem context and study the material to determine the precise nature of the

problem they aimed to research. As such, time constraints challenged her group's ability to maintain the core features of the research cycle.

In addition, Hester could not always carry out the research cycle with all participants. Because she worked part-time, she could not attend the research lesson of her group, which was planned on a day when she did not work. She reflected, 'It is still not the full idea of lesson study because the research aspect and the preparation aspect still come off badly. Only, to be honest, I also do not know how realistic that is as that would require much more time' (D2). She indicated that to maintain all the core features, she would have needed two-hour meetings at least, but that, with the current schedule, was not feasible.

Erin continued lesson study without full attendance. Teachers in her lesson study group worked at different locations, and their schedules differed to such an extent that the only solution had been to plan two post-lesson discussions: one for teachers working at her location and one for those working at another location. Erin could not manage to have everybody present to observe the research lesson, including herself, as she had to teach. She also reported that scheduling made continuing lesson study with all participants difficult, as the school prioritised instruction time.

Paul also continued lesson study without full attendance. He explained, 'We made the choice not to have everybody observe during every research lesson, because schedule-wise this was not possible. But we did make sure that at least two or three of the group were observing' (D4). This decision also influenced the post-lesson discussion, which they also had to split. Only the people who attended a research lesson attended its post-lesson discussion.

In summary, the continuation of lesson study was influenced by various school factors at Adams. These school factors influenced the continuation of lesson study as a shortened and simplified version.

Simultaneity of school factors

Our findings indicate that in the 14 schools, it was rarely the case that only one school factor was reported to be of influence. However, they did not make clear the influence beyond each specific school factor. The narrative portraits in this section provide this insight, revealing that school factors tended to occur simultaneously, thereby providing many constraints for schools. As such, while all school factors had their own specific influence, their complexity and limitation on schools' ability to continue with lesson study only become clear by exploring their simultaneous occurrence.

Discussion, implications, and limitations

This study aimed to answer the call that research on PD should attend to the influence of the wider school context (Kennedy 2010; Opfer and Pedder 2011). Our research shows that school factors connected to whether and how new initiatives were continued in schools after a PD project ends. Although the findings are suggestive rather than causal, this finding should raise the attention towards the importance of the school factors on PD.

We found that four school factors were reported most frequently in relation to schools' (dis)continuation of lesson study: part-time working teachers, turnover, policy

on school improvement and scheduling. In all cases, these school factors were reported to inhibit lesson study from becoming a repeated, recognisable pattern of interdependent actions, carried out by multiple actors in the school.

Part-time working teachers was often reported to considerably influence the (dis)continuation of lesson study. As mentioned previously, this characteristic is a specific Dutch feature of employment, as the Netherlands has the second-highest number of teachers working part-time worldwide (i.e. 58%) (OECD 2020). Our study shows that when teachers have substantially different schedules and workdays, the ability to organise collaborative activities becomes incredibly complex, as teachers can often find no time when they are all at school at the same time. Meetings were often shortened to work around teachers' schedules, constraining the maintenance of the core features and simplifying the research cycle (recognisable pattern of interdependent actions). This led to compromising on full attendance (multiple actors). Part-time working teachers, therefore, pose a considerable challenge to continuing with lesson study in the Dutch context.

In addition, turnover was also often reported to influence the (dis)continuation of lesson study in many schools, in line with previous literature (Guin 2004; Klingner, Boardman, and McMaster 2013). Schools specifically reported turnover constrained lesson study from becoming a repeated practice in the schools after the LSPLN (*repeated*). Turnover meant a loss of lesson study expertise and an increase of instability and uncertainty among staff. Once created and embedded, organisational routines can stabilise new initiatives in the face of turnover (Sherer and Spillane 2011). Our study indicates that if a new initiative is not (yet) an embedded and established organisational routine in schools, it is vulnerable to turnover. Schools were often unable to continue with lesson study when staff consistency was absent. Continuing with lesson study required the consistent presence of specific individuals, such as the trained facilitators, and support from knowledgeable school leaders who could explain the new initiative and foster enthusiasm for it. When these people leave, the continuation of the initiative is challenged.

Schools also reported that the policy on improvement, specifically the tendency to organise multiple and changing initiatives, influenced the (dis)continuation of lesson study, which aligns with previous findings (Akiba 2016; Akiba & Wilkinson, 2016). The variety of initiatives meant that often limited resources, such as time, needed to be shared and teachers often needed or chose to attend other activities organised at similar times (multiple actors). In addition, the priorities of the school improvement initiatives tended to change yearly, further constraining lesson study from becoming a repeated activity in the school (*repeated*). While PD might have moved to teachers' workplace, the changing priorities in schools are likely to make the continuation of lesson study a short-term endeavour.

Many (eight of the 14) schools reported scheduling as influencing the (dis)continuation of lesson study. In these schools, instruction time was prioritised, and teachers had little room to create time for collaboration, which meant that oftentimes the research cycle was simplified and core features were left out (recognisable pattern of interdependent actions). Of the six schools in which scheduling was not mentioned as an influencing school factor, four continued with lesson study. In these schools, scheduling seemed more directed at also supporting teacher learning. A possible reason for this difference is that scheduling is also informed by different beliefs about teaching and learning. In

Japan, teacher learning is deemed a core responsibility, and schools prioritise it in their schedules (Akiba 2016). In other contexts, such as the United States, teacher learning is not considered an integral part of the profession, and schools are primarily organised for student learning (Hiebert and Stigler 2017). The Netherlands varies greatly in how school leaders perceive teacher learning: some consider it their responsibility to organise and facilitate PD, while others do not (Inspectorate of Education 2018; Van Driel et al. 2012). This variation could explain why some schools did not have trouble with arranging time in their schedules for lesson study. As such, views on teacher learning can exert a powerful influence on how scheduling occurs. Moreover, addressing these scheduling challenges might not be possible until the more deeply seated beliefs about teacher learning are altered.

The two narrative portraits examining the simultaneity of school factors paint a more nuanced picture of the environment in which PD takes place. In all 14 schools, rarely was only one school factor reported to be of influence. Instead, schools reported a hullabaloo of school factors that influenced their (dis)continuation of lesson study, in line with previous research (Kennedy 2010). While school administration could possibly deal with one or two constraining school factors, the co-occurrence of multiple constraining factors (often not just malleable processes, but also fixed school characteristics and features of employment, which are more difficult to influence) made continuing with lesson study particularly challenging. Organising collaborative, long-term, school-based PD, such as lesson study, is extremely difficult when teachers work part-time and turnover, especially in school leadership, is high (Guin 2004). Given that school factors beyond the control of teachers and school leaders considerably influenced organising collaborative learning, an important implication of our research is that schools could use this information to make more informed choices about how to spend their resources and whether, in their context, organising PD initiatives such as lesson study is feasible. Our results show that some schools had less trouble with school factors, for example, when there were fewer part-timers and scheduling was directed at teacher learning. In these cases, it may be worthwhile to pursue lesson study initiatives. In other cases, the school factors in a specific school context might be so complex that another initiative might work better for that school. In general, when organising PD initiatives for staff, schools should take the specifics of their own context as the starting point for making decisions about which initiatives are suitable.

Our study has several limitations. First, we interviewed informants once, which gives insight into the (dis)continuation of lesson study in schools at only one point in time. Examining schools at more points in time could shed more light on whether and how lesson study unfolds in the schools (Parmigiani and Howard-Grenville 2011; Spillane 2012). Second, supplementing interviews with observations could offer a broader picture of the school factors, which in our case, given our aim to explore many school contexts, were limited to those reported by school leaders and teachers from the 14 LSPLN schools (Yin 2011). Third, we conducted interviews with school leaders and former LSPLN teachers only. Including, for example, other participants in the lesson study groups or the LSPLN teachers' departmental colleagues in the schools that did not continue could provide more comprehensive insights into the influence of school factors on why lesson study was (dis)continued. Last, we chose to highlight school factors, as they have been underexamined and overlooked in research. Although we find that school factors have

considerable influence on whether and how lesson study was continued after the LSPLN ended, other factors may be important, such as culture (Stigler and Hiebert 2016) or leadership style (Wolthuis et al. 2020a).

In conclusion, foregrounding the voices of school staff revealed a hullabaloo of school factors that make up the lived reality of the day-to-day work in schools. These school factors often constrained continuing with lesson study. As such, examining the school factors provides an understanding and acknowledgement of the organisational challenges for those working in schools to move beyond the simplified and shortened versions of PD initiatives and towards richer and more meaningful teacher learning.

Disclosure statement

No potential conflict of interest was reported by the authors.

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