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## **Teacher perspectives about lesson study in secondary school departments: a collaborative vehicle for professional learning and practice development**

### **Abstract:**

Two departments in a secondary school in England participated in 'lesson study' projects over a five-month period to explore its usefulness as a vehicle for professional development. Through a cycle of two research lessons, conducted separately in each department, teachers identified challenges that inhibited the learning of their students and collaboratively prepared innovative approaches to address the learning challenges. The process yielded multiple sets of data: DVD-recorded lessons, lesson plans and resources, transcripts of preparation and evaluation meetings and individual interviews at the end of the project. This paper draws principally on detailed qualitative analysis of end-of-project interviews about teacher experiences of learning and practice development in the two contexts. While the teachers encountered some logistical challenges to the implementation of lesson study, a number of important gains were reported: collaboration in lesson study reduced feelings of professional isolation; teachers reported a sharper focus on pupil learning and more confidence to take risks with approaches to teaching, which led to greater opportunities for pupils to engage in interactive activities, for example involving problem-solving and peer teaching in groups.

**Keywords:** secondary school, lesson study, collaboration, observation of learning, teacher development

### **Introduction**

The purpose of lesson study is improvement in the quality of teaching through a 'reflexive, recursive and collaborative' process (Dudley 2011, 5). Translated from the term '*kenkyu jugyou*' meaning lesson study, the process originates from Japan where it has been widely used since the 1950s (Abiko 2011). A lesson study cycle involves small groups of teachers collaboratively planning a 'research lesson' that is taught by one member of the group while the others observe one or two 'case' pupils (Dudley 2011). The lesson is then evaluated in light of the reflections of the teacher and the insights of those who observed their respective case pupils. Subsequently, the lesson may be revised for further teaching with other classes (Hiebert and Stigler 2000). What distinguishes this from other forms of professional development is the planning of jointly conceived research lessons to address particular problems with learning, rather than focusing on the performance of an individual teacher.

The process requires an investment of time and patience: 'Lesson study is a process of improvement that is expected to produce small, incremental improvements in teaching over long periods of time' (Stigler and Hiebert 1999, 121). Consequently, it may not be attractive

in school systems that are hungry for quick-fix impacts, for example on examination results. Despite this, its use is growing and ever larger numbers of research investigations have explored its effectiveness in different contexts (Lewis, Perry and Murata 2006; Fernandez 2002; Fernandez, Cannon and Chokshi 2003; Lawrence and Chong 2010; Dudley 2012, 2013). According to Lewis (2004, 19), teachers in Japan have identified seven pathways of improvement resulting from lesson study: ‘increased knowledge of subject matter, increased knowledge of instruction, increased ability to observe students, stronger collegial networks, stronger connection of daily practice to long-term goals, stronger motivation and sense of efficacy, and improved quality of available lesson plans.’ As research evidence attesting to its benefits grows, the question of how it transfers to the practice of schools in other parts of the world becomes important.

### **Context of the Research**

An East Midlands urban secondary school in England, with 1100 students on roll, engaged in lesson study over two terms in mathematics and modern languages. Typical of such schools, among its core development targets are the improved effectiveness of individual teachers and the improvement of students’ attainments. Teachers are frequently expected to demonstrate high levels of ‘performance’ against national teaching standards in readiness for inspection by the Office for Standards in Education (OfSTED).

The focus of the article is on reporting the outcomes of our analysis of end-of-project interviews with teachers about their engagement in lesson study, exploring the following questions:

1. From teachers’ points of view, what positive and negative consequences for their professional learning and practice development arose through collaboration in lesson study?
2. How did teachers construe how their participation in the process influenced their thinking about classroom teaching?

The rest of the paper is organised as follows: review of previous research into lesson study, the focus and design of the research we undertook including information about participants, methods of data collection, processes and procedures of our analysis of teachers’ interview accounts, followed by discussion and conclusions.

## **Research and Lesson Study**

In order to situate our research in the international context, we undertook a review of research into lesson study to reveal well over 200 studies that focus on continuing professional development although many of these describe (or prescribe) the process and how it assists learning and practice. In addition, there is a growing literature that supports or recommends the use of lesson study (Tall 2008; Galanouli 2010; Dudley 2011). Research papers that evaluated lesson study highlighted four principal benefits for teachers:

- Greater teacher collaboration
- Sharper focus among teachers on students' learning
- Development of teacher knowledge, practice and professionalism
- Improved quality of classroom teaching and pupil learning outcomes.

Each of these benefits is briefly discussed in the next sections.

### ***1. Teacher Collaboration***

Studies of lesson study and its outcomes report improved collaboration among teachers. Such collaboration is fostered through teachers' increased willingness to participate in focused discussions about specific aspects of teaching and learning (Rock and Wilson 2005), leading to positive impact on participants' knowledge, skills and practice. Collaboration in lesson study enables teachers to share know-how and resources, to bring multiple perspectives to bear on making sense of successful pupil learning and to support the development of strategies to promote this (Sibbald 2009). It also enables teachers to engage in joint decision making and to develop a heightened sense of joint responsibility for teaching and learning as a key pre-condition for the cultivation of professional learning communities (Lawrence and Chong 2010; West-Olatunji, Behar-Horenstein, Rant and Cohen-Phillips 2008).

### ***2. Sharper Focus among Teachers on Student Learning***

A growing body of research reports that lesson study directs teachers' attention to learners and learning by opening up space and time for teachers to attend more closely to particular aspects of students' learning. This sharpening of focus afforded by lesson study processes helps teachers to develop greater awareness about students and their needs (Dudley 2013; Lee 2008; Perry and Lewis 2009; Rock and Wilson 2005; Ylonen and Norwich 2012). For instance, it has been reported that teachers become more attentive to students' prior knowledge (Dotger 2011) and more analytic in making connections between a set of learning

objectives and what their students already know (Lawrence and Chong 2010). Such research suggests that participation in lesson study helps teachers to develop more contextualised insights into their students' learning and deepens their collective learning about students. As a result, students' learning needs influence teachers' thinking, planning and practice in increasingly explicit ways, leading to more learner-responsive teaching.

### ***3. Development of Teacher Knowledge, Practice, and Professionalism***

Improvements in teachers' knowledge and skills have been attributed to participation in lesson study with gains reported in teachers' subject content knowledge (Dudley, 2013; Fernandez 2005, Lewis 2009), knowledge about pupils (Fernandez 2005; Lee 2008; Lewis 2009), knowledge about technology for teaching secondary mathematics (Meng and Sam 2011) and what Shulman (1986) identified as pedagogic content knowledge or PCK (Fernandez 2005; Lawrence and Chong 2010; Lewis 2009; Lewis et al. 2009; Sibbald 2009), that is, how teachers interpret and mediate subject knowledge to facilitate students' learning. It has also been claimed that lesson study leads to changes in teachers' attitudes and beliefs about teaching as a profession (Pella 2011; Sibbald 2009). Collegial support among collaborating teachers contributes to improvements in teachers' confidence to work with new ideas (Meng and Sam 2011; Sibbald 2009; Lewis, Perry, Hurd and O'Connell 2006; Rock and Wilson 2005), their self-efficacy in making a positive impact on pupil learning (Puchner and Taylor 2006; Lawrence and Chong 2010) and hence their professional self-concept as teachers who believe their work to be significant and meaningful (Sibbald 2009).

There is evidence that participation helps teachers to develop an inquiry stance and become more reflective about their practice (Fernandez 2005; Ricks 2011). The cyclical plan-teach/observe-evaluate procedures of lesson study offer a kind of 'reflective immediacy' (Shulman 2003, cited in Fernandez 2005: 283) that provides richly contextualised and concrete reference points for the ongoing work of experimentation, adaptation and refinement of practice, as argued by Lewis, Perry and Hurd (2009) in their important theory-building paper.

### ***4. Improved Quality of Classroom Teaching and Pupil Learning Outcomes***

Other frequently recorded benefits relate to improvements in the quality of classroom teaching and pupil learning outcomes, classified in three ways. First, developing teachers' professional knowledge and beliefs leads to improvement in classroom strategies to support more effective pupil learning (Dudley, 2013; Fernandez 2005; Lewis 2000, 2009; Ylonen and

Norwich 2012). Saito, Harun, Kuboki and Tachibana (2006) from a school-university joint lesson study project in Indonesia, reported three improvements in (a) the academic base of lessons, (b) the structure of lessons, and (c) the engagement of students. Secondly, developing teachers' personal characteristics and dispositions such as their sense of self-efficacy and professional identity motivates them to assume more responsibility for pupil learning (Lewis et al. 2009; Sibbald 2009). Thirdly, lesson study changes the norms and dynamics of teachers' communities of practice (Wenger 1998; Lave and Wenger 1991) as safe, trustworthy yet challenging environments in which teachers not only share knowledge and resources but also experiment with new ideas (Lieberman 2009).

Some studies explain the influence of lesson study on teaching and learning by focusing on characteristics of 'the research lesson' as a unit of analysis. For instance, Robinson and Leikin (2012) conducted detailed analysis about different aspects of two research lessons carried out by the same teacher, comparing features such as lesson structure, time allocation to different tasks and lesson phases, the nature of classroom tasks, student involvement in tasks, and the structure of classroom discussions. They concluded from their painstaking study that lesson study had contributed to significant changes in teacher practice in the course of just two research lessons:

The changes in the nature and structure of tasks and their suitability indicate that in lesson 2, the teacher was more focused on the students' thinking, difficulties, and abilities (Robinson and Leikin 2012, 158).

Most claims about the positive effects of lesson study result from research conducted in the Far East or North America, much of it in primary schools. There are relatively few studies in other contexts, and hardly any in England, the notable exceptions being Dudley (2012, 2013) and the work of colleagues in Exeter (e.g. Ylonen and Norwich 2012).

## **The Research**

Given the scarcity of lesson study research in English schools to date, we decided to adopt an exploratory, open-ended, qualitative approach to our research. We wanted to prioritise teachers' own ways of making sense of their participation, experiences and learning through collaborating with colleagues in lesson study groups. Since it was teachers' perspectives articulated in their own terms and language, we regarded it as important to avoid the application of *a priori* categories to the analysis of data, seeing the expressed perspectives of

teachers as the most authentic starting points for understanding the effects of lesson study. Instead we wanted to prioritise teachers' own ways of making sense of their participation, experiences and learning through collaborating with colleagues in lesson study groups. Initially, we thought that the notion of community might have potential for developing understandings of how and why teacher learning might occur in lesson study contexts. Drawing on useful insights from Levine (2010), some notions of community carry more potential for understanding learning through lesson study than others. We agree with Levine (2010) that the notion 'community of learners' lacks sufficient theoretical specificity and can be used rather vaguely to refer to quite different modes of teacher collaboration. We also decided not to frame the research with reference to the notions of 'professional learning community' and 'teacher professional community' as these frameworks carry particular value for understanding norms of collaboration and the wider professional, organisational and policy context that support learning and professional development. However, we did consider the notion 'Community of Inquiry' as a possible framework for conceptualising the professional learning and practice development we report here. The focus of 'Inquiry Communities' on the joint transformation of professional knowledge from unexamined private elements of thinking and practice to conscious public and therefore shared and critiqued assumptions, knowledge and beliefs (Cochran-Smith and Lytle 1992, 1999, cited by Levine 2010) we thought would be useful, especially in light of Dudley's important lesson study research (Dudley, 2013). The 'cycle of inquiry' model at the heart of 'Inquiry Communities' (Sagor 1992, cited by Levine 2010, 112) provides a good fit with the recursive stages of the lesson study cycle and draws attention to the importance of research as an intrinsic element of teacher learning supported and promoted through lesson study collaborations. Nevertheless, despite their value for understanding different facets of teachers' collaborative learning (Levine, 2010), we decided not to be wedded exclusively to one or other of these concepts of community.

### ***Participants***

Participation in the initiative was voluntary, one of the school's senior managers inviting expressions of interest from departments. Two groups consisting of four Mathematics teachers (one male, three female from a department of seven) and three Modern Language teachers (all female, from a department of four) volunteered. The teachers had varying levels of experience and responsibility: three newly qualified teachers (Chloe and Carla teaching mathematics, Sandra teaching modern languages), a head of modern languages (Patti) with

nine years experience, the second-in-charge of the mathematics department (Sarita) with six years of teaching and two teachers in their third year of teaching (Sam, teaching mathematics and Jenny, teaching modern languages). All names have been changed to maintain anonymity.

### ***Lesson Study Induction and Procedures***

Participating teachers were inducted into the project at an initial meeting with researchers who drew on guidelines developed by Dudley (2011). Following discussion of what was feasible with the time, budget and resources afforded to the project, the following five stages were agreed:

1. Review of learning challenges facing students in a specific curriculum unit for each subject in Years 7, 8 or 9
2. Identification of 3 case students for detailed observation during a research lesson
3. Joint planning of a 'research lesson' based on the needs of the case students
4. Teaching and joint observation of the research lesson
5. Post lesson evaluation meeting

After this framework had been agreed, the teachers were free to work together in ways they believed appropriate to their contexts and the learning challenges they identified.

### ***Development of Research Lessons***

The two groups collaborated in the design, teaching and evaluation of two research lessons, over two terms. In each case, there were two planning meetings each lasting approximately one hour but only the second was recorded because participants believed that researchers would not be interested in the first meeting. The meetings were not formally chaired or minuted but discussion in the planning meetings was framed by the school's lesson structure i.e. TEEP, *Teacher Effectiveness Programme* (<http://www.teep.org.uk/>), which is a four-stage lesson structure that many schools have accepted as a quasi-mandatory template for their lessons. This 'traditional' four-stage approach to lesson planning (dividing the lesson planning discussion under four broad headings: objectives-starter-main-plenary) shaped discussions in the planning meetings. There was also frequent reference to starter activities, main activities and plenaries, three-part lesson components, commonly used in schools in England since the introduction of the Numeracy Strategy in the late 1990s.

Planning meeting discussions were supplemented by email exchanges to which researchers did not have access, an aspect of interaction in lesson study projects that future research needs to address. Following each research lesson there was an evaluation meeting lasting half an hour, which was recorded. Audio-visual recordings of the research lessons, subsequently viewed by the teachers, were made available to the research team together with lesson plans and resources to support our understanding of teachers' accounts by providing relevant contextual detail of the research lesson.

Planning meetings began with elaboration of the learning challenge to be addressed in the research lesson. The teachers chose to design two separate research lesson cycles (see table 1 for details of the focus in each case) so that they could experiment with approaches to addressing particular learning challenges with two different year groups. One effect of planning two separate cycles, for both teams, was that research lessons were not revised and re-observed collaboratively in successive iterations of the cycle in ways described by Hiebert and Stigler (2000) or Dudley (2011), although Lewis, Perry and Murata (2006) do not stress the re-teaching stage and Lewis (2002) suggests that it is not always re-taught. Effectively,

	Modern Languages 1	Modern Languages 2	Mathematics 1	Mathematics 2
Year	9	7	7	8
Students	32	27	24	23
Specific learning challenge	Students do not extend the use of the foreign language to talk about their own learning. They revert to English; using the target language in these phases had been a challenge for teachers and students.	Exclusive use of target language to talk about hobbies: students had been reverting to English in group tasks and the teacher had faced difficulty in supporting the use of the target language.	Converting between fractions, decimals and percentages e.g. students do not realise that $0.25 = 25\% = \frac{1}{4}$ Teachers reported difficulties in raising awareness of this relationship.	Measuring surface area: students would mix up volume of a shape and the surface area (described as a misconception by Sam). Finding engaging approaches to this was the challenge for teachers
Innovation	Placemats: individual mats at each student's space with key foreign language presented.	Using peer teaching in groups of three: selected students acting as teachers; the class teacher acting as guide or facilitator.	Interactive activities to enable students to match fractions to decimals to percentages i.e. engage in conversion.	Use of assorted containers to allow students to measure surface area in small groups.

Table 1: Learning challenges and innovations for the research lessons

the teams planned two different research lessons, the mathematicians for years 7 and 8, the linguists for years 7 and 9 (see table 1 for a summary of the learning challenges identified for each class). Three participants in their interviews reported this failure to re-teach the lesson as a weakness but analysis of planning meetings revealed a consensus at that stage in both



groups for two differently-focused research lessons. However, individual teachers reported that they adapted and used the two research lessons with other groups while lamenting the fact that there were no further school resources to enable more observation and evaluation of the refined and adapted lessons. The lack of time for further engagement was the most frequent critical observation made by several participants.

### ***Method of Data Collection***

Researchers were not present during the planning, teaching and evaluation of research lessons, as advised above, but conducted informant-style interviews (Powney and Watts, 1987) after the evaluation of each research lesson. We decided to adopt an 'informant style' interview strategy (Powney and Watts, 1987: 18) as best suited to our aim of enabling participants to describe their learning trajectory from their points of view, unhindered by pre-determined questions devised by researchers. Informant-style interviews are loosely structured with the interviewer acting in a non-directive way, seeking to support informants in telling their own accounts in their own terms. Teachers were asked to recount their experiences during planning and evaluation meetings, what was salient to them in the preparation and observation of research lessons and how the process had influenced their thinking, learning and practice. The challenge facing us in carrying out these interviews was in finding a balance between ensuring an interview focus that reflected the focus of the research while at the same time providing teachers with enough space and freedom in which to develop their own accounts from their own perspectives.

We rehearsed the interview approach and agreed to restrict our role to offering invitations to talk about the process through such questions as: *Can you tell me about the process and your participation in it? How useful have you found the process to date in terms of your learning, thinking and classroom practice? What do you think has been important in the process? What have you done that has helped your learning/others' learning? What have others done that has helped your learning?*

Within this interview frame, teachers were free to talk about anything that they regarded as salient. In order to be confident of the authenticity of teachers' accounts we also used a probing strategy by asking for plenty of contextual detail, specific examples of general claims, and for clarification when we could not understand something a teacher had said or when something a teacher had said appeared to contradict what had been said earlier in the

interview. In practice, however, this approach proved challenging for the three researchers who interviewed (see Appendix 1 for examples of questions used).

We had intended to interview at three points (post-planning, post-evaluation and again at the end of the project) but logistical and workload challenges made this unrealistic, in particular with regard to post-planning meetings which only three interviewees could attend. However, all participants attended interviews at the end of the lesson study cycle, thus yielding an end-of-project account from all seven participants. These lasted between 25 and 30 minutes and are the data analysed in detail for this paper.

Interviews were transcribed and read by all members of the research team to arrive at an initial view of the range of teachers' perspectives about lesson study. Subsequently, two members of the team, working independently, engaged in a detailed constant comparative analysis (Powney and Watts, 1987, 166-167) to arrive at a commonly agreed set of themes developed from the interview data.

### ***Data Analysis: Coding and Themes***

Through repeated close scrutiny of the transcripts, teachers' ideas and constructs were analysed, interpreted and grouped in thematic units. Provisional coding of themes was compared and discussed by members of the research team until we arrived at a commonly agreed mapping of ten themes derived from identification of 564 thematic units in total. The ten themes were:

1. Student participation and progress
2. Student-focused observation
3. Teaching approaches
4. Amendments agreed in review meetings
5. Summative observer evaluation
6. Summative teacher evaluation
7. Lesson study potential including constraints
8. Collaboration
9. Teacher learning

## 10. Impact on practice

Themes 1-6 related to discussion of the particular research lessons and were specifically about events that took place in those lessons. Theme 7 related to the potential of lesson study for future professional development and possible constraints on its implementation in a secondary school, notably availability of time and opportunities for collaboration. Given our interest in understanding teachers' learning through lesson study, our most detailed analysis was given to those parts of their accounts that related to the process overall (themes 8-10, accounting for 37% of the commentaries). These are the focus of our discussion as they related to the perceived impact of the process as a whole.

### **Research Lesson Perspectives**

What teachers had to say about the research lessons in particular (themes 1-6) was important, so we begin with a brief summary of these perspectives. A pervasive feature in teacher accounts was a clear emphasis on collective agency and shared decision-making. While there were occasional evaluations of individual teacher performance, the perspectives expressed in interviews tended to be 'we' inclusive, with references to 'our' planning and 'our' lesson.

What was also clear from comments about research lessons was the importance of insights gained about students. Many thematic units focused on students (27%) or issues related to the observation of students (13%), usually the value of such close observation (see Appendix 2 for examples of teacher comments) in relation to the participation and engagement of selected students during the lessons. These were the most salient themes in teachers' commentaries on the two research lessons, taking up much more time in interviews than discussion of how the lessons had been taught (Theme 3).

Another striking feature was the degree of similarity in teacher accounts, both mathematics and modern languages, despite the fact that the two groups never met to exchange views during the project. There was a commonly-held view that the research lessons had been successful and represented a departure from 'normal' practice with inclusion of more 'practical' approaches to learning (Theme 3). *Hands-on, interactive, problem-solving* and *discovery* were words used to categorise the collaboratively planned responses to the learning challenge. Thus, what students did dominated teachers' accounts of individual research lessons, with only a small percentage of units reflecting discussion of other themes 4-6, for example summative evaluations of the quality of lessons, almost all of which were positive (themes 5-6).

For each research lesson, there was discussion of how the learning challenge had been addressed. The modern language teachers claimed greater use of target language for self-assessment purposes (research lesson 11, the placemats with key language provided the necessary scaffolding while in the second lesson the peer teaching strategy worked effectively with students working and learning independently in groups of three. The first mathematics lesson was a qualified success but adjustments were needed as one of the activities did not work in the way envisaged; the second which incorporated a practical measuring activity with assorted containers was evaluated with great enthusiasm and confidence that a breakthrough in their approach had been made.

### **Benefits of Engagement in Lesson Study**

In addition to expressing views about each research lesson, teachers talked about the lesson study process as a whole and what they considered to have been helpful to their learning and practice development. Three principal benefits were identified (themes 8-10). As examples in Appendix 2 illustrate, teachers highlighted the benefits of collaboration (Theme 8) and two types of impact: the impact of lesson study on their own learning (Theme 9) and, perhaps more specifically, the influence it had on their thinking about teaching (Theme 10), the latter often expressed with resolutions about intended changes in practice. All respondents described the approach as useful and formative, even enjoyable, and were able to identify some potential longer-term impact on their professional practice. We turn now to consider these three principal themes in more detail, drawing on participants' commentaries.

### ***Collaboration***

Collaboration particularly in planning enabled all participants to share thinking and promoted reflection, which in turn led to discussion of challenges facing learners and the rehearsal of approaches to teaching. Less experienced teachers welcomed this in particular:

*So that's made me think a lot and I think a lot of that thinking we, all four of us, brought to this process, so I think planning with other people definitely very helpful.*  
(Chloe, newly qualified teacher)

In particular, Sam welcomed what he reported as an infrequent opportunity for collaboration about students' learning and sharing ideas about how to address the students' misconceptions and misunderstandings, a recurring theme in his interview:

*Sitting around the table and actually going through the lesson with other teachers and the misconceptions ... (Sam, three years experience)*

Despite the primary focus of lesson study on observing student learning, however, collaboration was still valued for benefits bound up with opportunities to watch the most experienced teach:

*.....actually I love observing XXXX. She's such a good teacher that I really enjoyed having that inspiration again and knowing that it was relevant to me because I'm going to teach that lesson later on ... just to have fresh inspiration and that and also just to know that you're on the right track ..... (Jenny, three years experience).*

Jenny found the opportunity reaffirming, inspiring and reducing isolationism, another reported benefit from 6 of the 7 participants. Operating in isolation had led three early career teachers to report feelings of stagnation prior to engagement in lesson study. Sam said that 'within the teaching profession you don't get time to collaborate that much' and welcomed the opportunity to rehearse teacher explanations in order to address the learning challenge. He contrasted experience of lesson study with his daily life as an 'individual' teacher engaged in frequently solitary activities:

*Uhm, well I'm supposed to develop like, as an individual, it seems like a lot of work on your own, but definitely when you're sitting around a group with other teachers in the maths faculty, there's a lot more collaboration and I think that's the most important thing (Sam).*

Working as a community of teachers offered an escape from isolation also for newly qualified teachers and understanding of the social nature of teacher learning:

*So I think it's kind of taught me that... to be able to learn I guess, you do need other people's input into it or input from elsewhere, rather than if you just carry on it's just the same practice at the end again, and you can try new things, but it's always similar (Carla, newly qualified maths teacher).*

While the above provides a convincing testimony to the value of engagement in the process, lesson study was not seen as a quick process and mathematics teachers, both newly qualified and experienced, believed that it should be a continuing activity.

*I really enjoyed it. I wish, I definitely wish I could do that more (Sarita)*

*It's just been really nice to sit down and like make the time to do that and to share ideas and I wish we did it more (Chloe).*

There were no apparent 'lone rangers' in the two teams and in the interviews comments about collaboration were consistently positive. All participants, particularly the most experienced, reported that the process had great potential in programmes of professional development:

*I definitely think it's got a place to help with professional development (Sarita, experienced maths teacher).*

With regard to possible long-term gains, teachers believed that lesson study could be embedded in a secondary school if certain conditions were observed. These included willingness to collaborate, dedicated time available for completion of the process and support from senior management. Not all were confident that these could be delivered, the principal concern being lack of time for collaboration, although six commented that collaborative forms of professional development should be more frequent.

### ***Impact on Teacher Learning***

When teachers spoke about what they had learned, what was said was often understandably 'local' in nature, usually relating to insights into individual students' engagement and performance in tasks. They were surprised by their observations which challenged previously held views about individual learners who often exceeded and challenged their expectations:

*We also noticed that with the middle ability student, she's normally quite a shy student. You know, she's conscientious and she does her work, but she doesn't contribute a lot vocally to the lesson. She was placed with two boys, and did really, really well. Communicating really well. Took part in, took part in all the activities and ended up beating her target she set herself. (Sandra, newly qualified teacher)*

The innovation in the first modern language research lesson focused on self and peer assessment with students discussing and self-assessing their work in the foreign language, a departure from usual approaches. The observer in her third year of teaching found, to her evident surprise, that the three case students were engaged in the lesson whatever their perceived level of ability:

*I think you sort of assume with shy students or lower ability students oh I just won't push them. I won't make them speak too much because it makes them uncomfortable*

*and actually if you give them support then they're away with everybody else and you don't really notice a difference between the shy and the confident student which was a massive shock to me (Jenny).*

She went on to advise that her close observation of students' behaviours and responses over the two lessons had led her to question already fossilized views of learners' potential and encouraged her to consider more creative approaches to teaching:

*I've also had the benefit that I know the students in both of those cycles and so it's been really fantastic to say 'I didn't know you could do that.' 'Isn't that surprising?' It kind of challenged my perception of them, ..... that's been really beneficial to me to kind of challenge my way of thinking.... (Jenny).*

Mathematics participants were also in no doubt about the value of student-focused observations. This realisation led to resolutions to look more frequently and more closely at students, especially those who might remain relatively hidden in the normal course of lessons:

*I'd be quite interested to watch like a bunch of middle-of-the-road kids and actually see, because they don't get my attention in the lesson, so it would be quite interesting to see what they spend their time doing (Sam).*

Mathematics meetings in particular saw teachers engaged in a kind of quest for pedagogic content knowledge or PCK (Shulman 1986), as recalled by one of the newly qualified interviewees who recorded how *'it took us a while to nail down actually what we were going to do it [the research lesson] on'* (Carla, newly qualified teacher). She reported that they spent a significant amount of time clarifying the learning challenge, discussing mathematical concepts, agreeing objectives and exploring the processes associated with pupils' learning. This led to agreement on the innovations they used in their research lessons, moving away from approaches that largely conceptualised teaching as telling or instructing, followed by individual practice activities. Observation in the classroom led to changes of perspective about learners, even among the most experienced staff:

*Probably something sort of that I'm supposed to know anyway, but I think I got to see it sort of first hand – if they can sort of work something out for themselves or you know, if they can do something you know, sort of actively, then the understanding is a bit more deeper, a bit better (Sarita).*

When reporting on their observations, experienced teachers tended to comment in terms of engagement or participation, sometimes with reference to motivation and enjoyment, but they also noted students' capacity to take more responsibility for learning:

*We discussed obviously the success of that as well and we both decided it worked really really well when we looked back at the video footage.... all of the students were engaged and motivated and they really liked the challenge aspect of it.*

(Patti, head of modern languages)

Both mathematics and modern language teachers reported that their views about the ability and engagement of students had been shaken by close observation of in-class behaviours, an opportunity reported as rare or even non-existent in their busy daily schedules. This demonstrated the value of lesson study as an eye-opening opportunity for colleagues, both newly qualified and more experienced.

### ***Impact on Teachers' Thinking about Classroom Practice***

The opportunity to observe students closely also impacted on perspectives about lesson quality which became more critical and more self-challenging, reported by six of the seven participants, including a newly qualified teacher of mathematics:

*I think what I would have said would be an alright lesson, I would now look at and think that's a really boring lesson, how can I make it more interactive or more involved, or more real world ..... I think it's kind of set my bar higher, and so all my other lessons are... they're not still at the top but they're a lot further there (Chloe).*

Chloe believed that lesson study had impacted positively on her confidence and the quality of her lessons, a perception also reported by Sandra, the newly qualified modern languages teacher in her first year, who believed that with the support of another collaborating colleague her understanding of learning and progression had increased:

*I've got sort of a good understanding now of where it's going and what learning's happening and what progression is happening in my lessons and it was sort of verified by another colleague (Sandra).*

All four mathematicians expressed more willingness to use discovery or problem-solving activities. They were, of course, familiar with such approaches but lesson study had provided the vehicle for the collaborative development of ways to address learning challenges in both



of their research lessons, each of which was judged to have been very successful during the team's evaluation meetings.

There were similar developments in the modern languages group. The willingness of one teacher to try new approaches increased following her observation of learners. Her routinized views of what constituted quality were altered, representing a challenge to previous thinking:

*I'm quite a young teacher only having taught three years and I've been shocked at how stuck in my ways I am already, you know, and so it would be really useful for perhaps other people who have been teaching even longer, for them to be challenged on interesting ideas. (Jenny)*

She believed that the quality of lessons had risen and learners had benefited from her willingness to organise opportunities for independent learning:

*.... be inspired to do for example, the independent learning or to have an analysis lesson just fully in target language, which for me are two quite scary ideas because they're quite out there, they could well fall on their face and they haven't, they've been really successful, so to be brave in trying new ideas and to know that it has worked and that it will work is great (Jenny)*

Jenny had a history of engagement with continuing professional development activities but had come to distrust these, because she could not 'see' them work in her school.

Collaboration in lesson study, situated in the practice of the school department and whose value she could see demonstrated, made her willing to take pedagogic risks:

*because I think sometimes you have training sessions and the small part of you says ah that's great in your nice posh school in the leafy suburb, that's not going to work in this school, and to see it work and especially for this second cycle to see it work with a mixed ability... (Jenny).*

Sandra, a less experienced colleague in her induction year, believed that she had become more confident about devolving responsibility to students, moving away from a teacher-telling approach in the classroom:

*It has now shown me that actually they can take that task upon themselves and learn independently which is something that's always a worry, especially as an NQT you think, you know, they need to know this by this date, there's this assessment coming*

*up and the only way to do that is me standing at the front telling them what they need to do and guiding them through it, ..... (Sandra).*

She saw how students could learn more than she expected through well-designed interactive activities, an unlikely development without lesson study:

*I've actually now just dared to try something and actually seen that it does work, and I think from that it's a huge positive, because now I can take this template for learning, and adapt it to whatever topic, whichever class, ... we've dared to do it and it's gone well (Sandra).*

Engagement in lesson study had emboldened Sandra and her more experienced colleague to experiment with pedagogy in the classroom by enabling learners to become the teachers of one another in interactive tasks. Students had responded very enthusiastically to this innovatory opportunity to take responsibility in the classroom. In addition, Sandra had evolved a much more critically questioning approach to lesson planning which had a sustained effect beyond the lesson study project:

*So every time I put a plan together now, you know because as I just had my final observation yesterday, you know I almost wanted to add that separate column: why am I doing this, in my head, as I am going along? (Sandra)*

Naturally, the extent to which such benefits might impact on teaching in the long term could not be determined and there was recognition that further lesson studies would be needed. Wider impact, beyond the participants in the project, was discussed by the most experienced respondents with leadership responsibilities who saw its potential:

*It's increased my teaching repertoire. ....And it's benefited the whole department rather than just one individual teacher (Patti).*

*.... definitely beneficial for me as a teacher but something that everybody can take and use in their lessons (Sarita).*

Sandra concluded that *'it's really opened my eyes actually'* which Chloe also echoed suggesting that it would appear to be a particular benefit for newly qualified teachers.

What was undoubtedly strengthened for all participants was the focus on teaching for understanding:

*I'd probably still do it the same cycle –the starter, introduction then the main and plenary – a four tier cycle, but I'd definitely think about the misconceptions a lot more, the misconceptions and ..... how I'm going to actually make sure the kids get a secure understanding (Sam).*

This stronger focus on the learners and the challenges they face was a benefit that all participants recognised.

## **Discussion**

We began this study interested in learning from teachers what they had derived from collaborating in lesson study and how participation influenced their thinking about teaching. We return to these questions in an attempt to summarise our own learning from the project. Our survey of the literature identified four benefits from engagement in lesson study, each of which is recalled in the discussion of our research questions below. However, teachers in this study firmly expressed three principal benefits: increased teacher collaboration, greater understanding about students, and increased willingness and confidence to move away from teacher-led approaches.

### ***Lesson Study and Collaboration***

Teachers appreciated the multiple impacts of supportive collaboration, highlighting how this enabled them to share ideas and resources, learn about the strengths of other teachers, recognise the limits of what can be observed by a teacher operating alone and experience stronger feelings of membership in a community of teachers. This was particularly true of teachers in their first year (Jenny, Chloe and Carla). Furthermore, collaboration was not confined to the duration of the project, suggesting development of a stronger community of teachers (echoing Lawrence and Chong 2010; West-Olatunji, Behar-Horenstein, Rant and Cohen-Phillips 2008). With regard to practice, as a source of ideas for activities, the collaborative process was also effective, for example in the decision to engage students in peer teaching of aspects of a foreign language or practical activities in mathematics, echoing the findings of Lewis, Perry, Hurd and O'Connell (2006) and Sibbald (2009).

Secondly, teachers reported a sharper focus on students, resulting in greater confidence to use and support independent learning. Observations and collaborative evaluations of selected students challenged assumptions about learning for example foreign language students demonstrated that they exceeded the expectations of their teachers. Such misguided

assumptions may be borne out of an isolationist individual approach to teaching. This sharper focus on student learning mirrored the findings of several studies discussed above (Lee 2008; Perry and Lewis 2009; Rock and Wilson 2005; Ylonen and Norwich 2012) and resulted in greater willingness to concentrate more on teaching for understanding, a benefit previously highlighted (Stigler and Hiebert 1999; Lewis 2000). Responding to learning challenges, the lesson study cycle offered opportunities for experimentation, adaptation and refinement of practice, resulting in collaborative and individual reflection about practice (echoing Fernandez 2005, Ricks 2011).

The combination of collaboration and the stronger focus on students contributed to the development of a transformed sense of what constituted quality in lessons. However, participants all reported that lesson study was time-consuming. They were aware that opportunities for this kind of detailed and focused collaboration were quite rare and that lesson study is not suitable if the requirement is for immediately measureable outcomes such as overnight improvements in test scores. No claims were made for such transformative impacts but there were expressions of anxiety about the fact that routinely not enough collaboration took place due to curriculum and workload pressures.

### ***Lesson Study and Thinking about Teaching***

Interview data strongly suggest that lesson study provided opportunities for teachers at all experience levels to experiment with different ways of being a teacher, resulting in impacts on their knowledge, practice and professionalism. Three principal dispositions occurred through lesson study, namely:

- greater understanding of learning behaviours of individual pupils resulting in altered views of what constituted quality in lessons
- greater willingness to experiment with less teacher-led approaches to pedagogy
- sharper awareness of the weaknesses inherent in relying on telling as a dominant teaching strategy.

As a result, six of the seven participating teachers claimed to be more confident and more inclined to design interactive, practical and problem-solving activities.

In relation to the fourth benefit identified in our literature review (improved quality of classroom teaching and pupil learning outcomes) there was confidence that there would be an

impact on classroom learning but teachers were cautious about making specific claims. Lesson study was in its infancy in the school and doubts were expressed about whether it would be sustained.

The detailed observation of case students appeared to have a significant impact on the seven teachers. Observation revealed levels of engagement and progress among observed students that frequently exceeded expectations, raising important questions about the reliability of teachers' judgements of student learning.

It is noteworthy that the two groups had worked separately on lesson study and yet came to very similar conclusions about its value and potential. If this were to become a common pattern of findings across different research projects in secondary school settings then leadership teams could take encouragement that whole school strategies aimed at the promotion of lesson study would not founder on subject specific differences. Our data point to the possibilities that lesson study can be implemented to support professional learning and practice development in secondary school departments.

## **Conclusion**

This study suggests that lesson study offers a practical framework for the collaborative identification of learning challenges and the development of creative solutions for the multiple dilemmas teachers face in classrooms. Teachers acknowledged its potential, reported the process to be clear, practical and rewarding. As a result, we would argue that lesson study offers a fruitful strategy for enhancing professional learning in secondary school departments, including support for the development of newly qualified teachers.

However, using lesson study on a sustained basis may be a challenge in a school system which is heavily influenced by measures of performance, of both teachers and students. Participants in this project were aware that lesson study involves incremental learning, through collaboration, awareness-raising and experimentation. Their one significant reservation related to the time investment needed to reap the full benefits to their thinking and practice.

Furthermore, we recognise that findings from this study are not generalisable to other contexts, although considered alongside findings from other studies the weight of evidence

about the value and effectiveness of lesson study is growing. In addition, ways in which lesson study is implemented need to be studied with scrutiny of impact on student outcomes so that we can argue from a stronger evidential base for the use of gradual, incremental approaches to pedagogic development. This will require a significant amount of time if experience elsewhere is an indicator of the kind of investment needed. Japan, in particular, has been refining its use of lesson study for decades. The project reported here suggests that it can be introduced where there is a will to adopt lesson study as a flexible developmental strategy but it cannot be implemented with the expectation that it will make immediate transformative changes to examination results. To take root lesson study requires ‘sustained commitment’ (Perry and Lewis 2009, 387) from both school leaders and teachers.

While the responses of participating teachers were encouraging, a wider evidence base for the adoption of lesson study is still needed so that we arrive at a fuller understanding of how it can be successfully blended into prevailing school cultures. In other words, there is an important leadership and organisational dimension that needs to be addressed. Schools that adopt tactical approaches to teacher development, based on short-term views, could find the ‘small, incremental improvements’ (Stigler and Hiebert 1999) that accrue from lesson study somewhat frustrating. In their responses, participants expressed welcome relief from the prevailing focus on the performance of individual teachers, allowing them to explore teaching and enabling them to feel that they had benefited professionally through participation in lesson study.

However, if we are serious about investing in collaborative modes of teacher development, their sustainability in data-driven school environments will need to be addressed by school leadership teams. We need research studies to explore the kinds of leadership practices and organisational cultures that are conducive to embedding lesson study (and other collaborative modes of teacher development) as a sustained mode of professional learning and practice development.

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## **Appendix 1**

### **Example questions used in an individual modern languages interview**

Interviewer: Please could you tell me something about the lesson study project so far? You know, how it's been for you as an experience?

Interviewer: Ok and what do you think has been important so far in the process?

Interviewer: Can you tell me something about the planning meeting? Some more details about the planning meeting if you can remember any (pause: 2 seconds)

Interviewer: Yeah that's good (pause: 2 seconds) ok in the lesson can you tell me about how the lesson went?

Interviewer: And how, how was the lesson for you as an observer? How did you approach it?

Interviewer: Ok that's interesting thank you is there anything else that's been salient to you in the process?

### **Example questions that emerged in individual mathematics interview**

INTERVIEWER: Ok, can you just sort of give a quick overview of cycle 2 in terms of what you chose, what you've done, how it's gone?

INTERVIEWER: And obviously you've had a couple of occasions, a couple of lessons now where you're observing really in a sense you're observing the kids rather than the teacher. How has that been?

INTERVIEWER: Yeah, yeah. Ok. Uhm, when you're sort of looking at the kids, how were you gauging how they were learning, what they were learning and how they were progressing?

INTERVIEWER: Ok, and if you then sort of roll that forward into the evaluation, how, what kind of things did you focus on in the evaluation in terms of the kind of discussion that you were having?

INTERVIEWER: And obviously you've done a couple of cycles now, so you've gone from all the pre-planning, observations, debriefs etc. If you think about it as a process, what would you amend if anything?

Appendix 2 Themes: teacher commentaries on participation in lesson study

Teacher Interview Themes			
Themes	Example	Them-atic units	% of themes
1. Student participation and progress	<i>They understood what I was saying and they could follow it, but did they really, could they remember it?</i> (Sarita, experienced maths teacher)	152	27%
2. Student-focused observation	<i>Learning wise in the lesson, they were all fine. My guess would be if, if I went in there next lesson then the able boy would be absolutely fine with doing it again and the other two would need quite a lot of reminding</i> (Chloe, first year maths teacher) <i>We also noticed that with the middle ability student, she's normally quite a shy student. You know, she's conscientious and she does her work, but she doesn't contribute a lot vocally to the lesson. She was placed with two, two boys, and did really, really well. Communicating really well. Took part in, took part in all the activities.</i> (Sandra, first year language teacher)	74	13.1%
3. Teaching approaches	<i>We just discussed all the kind of misconceptions and what was the most serious that students struggle with. And the most serious was between surface area and volume. And how were we going to actually get across that for the students and somebody .... came up with kind of like to bring up the boxes.</i> (Sam, maths, 3 years experience)	36	6.4%
4. Amendment agreed in review meeting	<i>The general gist of what we'd said in the meeting was the fact that we need to do some kind of assessment in a few... couple of weeks</i> (Sarita, experienced maths teacher)	19	3.4%
5. Summative observer evaluation	<i>It was pitched at quite a perfect level for them</i> (Sam, maths, 3 years experience)	15	2.7%
6. Summative teacher evaluation	<i>We both decided it worked really, really well</i> (Patti, experienced head of modern languages)	7	1.2%
7. Lesson Study potential incl. constraints	<i>..it's quite a time consuming process and ..... I've probably thought more about one lesson than I've thought about all my other lessons in the week</i> (Patti, head of modern languages)	51	9%
8. Collaboration	<i>So I think in a way as well, it sort of, I can take away from that, that what I think myself is actually being echoed by another colleague with more experience.</i> (Sandra, newly qualified language teacher, first year) <i>So all the resources that people brought to the table, I'll probably use at some point in the future now. .... I'm an NQT so it's just quite good to see other more experienced teachers teaching...</i> (Chloe, first year maths)	85	15.1%
9. Teacher learning	<i>I think it's kind of taught me that... to be able to learn I guess, you do need other people's input</i> (Carla, first year maths)	68	12.1%
10. Impact on practice	<i>I learnt a new activity that I wouldn't have learnt before, a team kind of translation</i> (Jenny, modern languages, 3 years experience) <i>....so definitely ... I'll cut my actual talking time at the board down.</i> (Sam, maths, 3 years experience)	57	10%
<i>Total</i>		564	100%