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Lesson Study: towards a collaborative approach to learning in Initial Teacher Education?

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Lesson Study (LS) case studies were conducted in two secondary school teaching practice placements in England. Using Dudley's framework, Geography and Modern Languages trainees and school-based colleagues collaboratively planned a 'research lesson'. This was taught by the mentor while the trainee and other teachers observed the learning of three 'focus' students. The lesson was reviewed and revised for teaching to a parallel group by the trainee and the cycle of observation and evaluation was repeated. In post-lesson study interviews, analysed from a Communities of Practice perspective, mentors claimed that LS facilitated rapid integration of the prospective teacher into departmental working practices while trainees claimed they benefited from the team approach inherent in LS. The process enabled participants to explore collaboratively the 'pedagogic black-box' enriching the experience and learning of both trainees and mentors. Successfully integrated, LS improves support for teacher development in teaching practice placements.

Keywords: pre-service teachers; teacher education; student teachers; secondary education; Lesson Study

Introduction

Internationally, Initial Teacher Education (ITE) is often challenged because 'what is taught in education classes is disconnected from teachers' work in the classroom' (Kotelawala, 2012, p. 67). Criticisms have led to calls in many jurisdictions for approaches that bridge the divide between university-led methods courses and school-based experience (Darling-Hammond, 2000; Korthagen, 2007, 2010; MacBeath, 2011, p. 378). In England, the responsibility for teacher education is shifting away from university-led programmes, with the development of school-led provision (Department for Education [DfE], 2013), for example in the form of School Direct and School-based Initial Teacher Training. Such moves involving school-led partnerships are likely to continue despite inspection evidence that university-led teacher education is effective (OfSTED, 2010).

Given the emphasis on the need to link university and school-based elements of ITE, we explored how Lesson Study (LS) can bridge the divide between methods courses and practical experience in an increasingly school-based ITE programme.

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LS is a collaborative activity which lies at the heart of teacher development (Lewis, 2000). It was first developed in Japan and has been in use for more than a century. Groups of teachers identify a challenge faced by their learners (e.g. thinking skills) and collectively plan a 'research lesson' that addresses the challenge. After detailed, meticulous planning (Fernandez & Yoshida, 2004, p. 6), the 'research lesson' is taught by a member of the team with the others observing the learning and engagement of a small number of case students as opposed to observing the teacher. The lesson plan is then reviewed in relation to the learning observed, amended and re-taught to a parallel group of students.

This is the first of a series of papers in which we evaluate the utility of LS in developing a critical approach to teacher learning situated in the praxis-oriented classroom as trainee teachers join a departmental Community of Practice. Two eight-week school teaching placements, within a one-year postgraduate secondary ITE partnership programme (2011–1212), were used as sites for the case studies. In relation to participants' learning, our specific purpose was to consider if and how participation in LS could lead to collaborative learning for both trainees and mentors. This meant that we wanted to explore whether this collaboration would enhance the quality of participants' understanding of specific aspects of pedagogy. Learning to teach is not just a matter of following procedures or instructions by repetition and imitation. There is a need to go beyond a mere surface mode of learning, characterised by reproduction of previously taught lessons and uncritical acceptance of one another's practice, suggestions and ideas. Moving towards deep learning about teaching involves reflection, analysis, critical introspection and application. These orientations and skills support not only the development of professional autonomy but also interdependence. Deep learning of this kind involves critically engaging with one another's practice and ideas, mirroring the aspirations for teacher education of Hiebert, Morris, and Glass (2003) discussed below. Marton and Booth (1997) usefully distinguish surface learning as focusing on the sign (i.e. information) whereas a deep learning approach focuses on what is signified (i.e. the meaning and understanding). A view of professional learning which distinguishes, on the one hand, between merely transferring information and, on the other, engaging in processes to develop pedagogic understanding influenced our thinking. In this regard, we also found the distinction between reproduction-directed learning and meaning-directed learning useful (Vermunt & Endedijk, 2011).

Understanding ITE as entry into a Community of Practice

Maynard (2001) highlights structural changes which have evolved in ITE in England since the 1980s, emphasising a shift from university-based learning to an increased responsibility for schools as the central site for initial teacher development. Furlong and Maynard (1995) suggest that trainees typically follow a learning trajectory through a number of stages, beginning in a phase of 'early idealism' and ending with a 'moving on' phase towards a first full-time post. This trajectory is mediated through practitioner-led mentoring. Maynard (2001) argues that the central role of mentoring within schools is best understood through the lens of situated learning, and hence, in Communities of Practice (Lave & Wenger, 1991). Communities of Practice, grounded in a socio-cultural view of learning, emphasise the development of individuals into a group that shares a particular interest, purpose and focus. Such

groups are characterised as sharing ways of interacting and thinking (Wenger, 1998). Mutual engagement is an important concept in Communities of Practice, a mode of belonging in social learning systems. Wenger (2000, p. 227) describes this as 'doing things together, talking, producing artifacts'. Participation in LS, a collaborative form of teacher inquiry, accords with Wenger's description of mutual engagement and its contribution to a sense of belonging in a Community of Practice.

Individuals entering a Community of Practice are initially identified as 'legitimate peripheral participants' as they do not share the intimate understanding of many of the group's media for thinking and interacting, such as some of its language or unwritten rituals. The immersion of the trainee into the life-world of their mentor and the subject department represents a transition into a professional group and its associated ways of working. Over time, participation in the community inducts new members into the shared norms and collaborative relationships through which 'mutual engagement' (Wenger, 1998, p. 72) is fostered and sustained. Through working together, a growing sense of 'joint enterprise' (Wenger, 1998, p. 73) that binds community members together is established. To pursue their 'joint enterprise' a Community of Practice develops a set of shared resources or 'shared repertoire' (Wenger, 1998, p. 73). The centripetal journey towards the centre is characterised by a deepening participation in these three facets of a Community of Practice and involves change in identity and thought processes of the novice. In a school placement, a trainee begins as a novice peripheral member of the department with the mentor as the central expert participant.

LS in ITE

As highlighted in the introduction, processes involved in successful ITE programmes are many and complex. Consequently, a number of approaches have been used as frameworks for new teacher development, for example innovations such as reflective journals and individual action planning. However, such approaches focus principally on the development of individual trainees, supported by mentors who act as supervisors but not as co-learners. Hiebert et al. (2003) offered a vision for ITE not about providing teachers with a battery of 'finished product' skills, but focusing on how to learn to teach:

> The model we propose claims that it is both more realistic and more powerful to help prospective teachers learn how to learn to teach mathematics effectively when they begin teaching. In other words, preparation programs can be more effective by focusing on helping students acquire the tools they will need to learn to teach rather than the finished competencies of effective teaching. (p. 202)

They argued that LS could contribute to the preparation of new teachers because its development processes are inherently based in a social learning context.

There is evidence in support of LS as a dynamic process for teacher professional learning at in-service level (Lewis, 2009; Lewis, Perry, & Murata, 2006), but we wished to explore ways in which LS supports engagement with the dynamics of practice in ITE. In order to locate the research reported here in the international context, and to learn from the growing body of LS research, we undertook a review of studies into adaptations and variations in the use of LS specifically in ITE contexts.

International research into the uses of LS in ITE

Bibliographic database searches (BEI, AUEI, ERIC and SCOPUS) revealed a growing number of studies about LS in ITE, the vast majority in the USA on the teaching of mathematics with a smaller number on science and general primary education programmes. We found that LS could take a number of forms, there being no single, widely-used approach. Myers (2012) identified 'formal' LS that closely mirrors the Japanese approach (Fernandez & Yoshida, 2004). This 'strong' form of LS follows the cycle (plan–teach–observe learning–evaluate) outlined in the introduction to this paper. Sims and Walsh (2009) conducted a two-year study of prospective Early Childhood teachers in which trainees were able to engage in a full LS cycle in the second year of their programme. This was deemed effective in developing reflective practice and reducing concerns about failing the teaching placement (p. 731). Sims and Walsh concluded that LS gives participants 'a true glimpse of what it means to learn from teaching' (p. 732). Leavy (2010), reporting on a project using a model lesson with 26 primary trainees in Ireland, found LS to be an effective laboratory for the development of subject knowledge and pedagogic content knowledge (namely teaching inferential reasoning in statistics). Her project involved a model lesson taught by the researcher. Five LS groups engaged in a full cycle of planning–teaching–evaluation, but only one trainee taught the lesson.

Chassels and Melville (2009) created a format of LS based on group development with 26 pre-service primary teachers in Canada. Over a four-week practicum, small groups of two to four trainees prepared, taught, evaluated and re-taught research lessons, thereby completing a full LS cycle. The researchers concluded that LS engaged them 'in focused discussion of curriculum, pedagogy, inclusive programming, the accommodation of diverse student needs and lesson effectiveness' (Chassels & Melville, 2009, p. 755). However, it was not clear whether all the trainees were able to teach a research lesson and mentors were not involved in teaching the research lesson, although their pivotal role in helping trainees to identify the learning challenge was stressed.

Few projects have managed to use full cycles of LS in ITE due to constraints, most commonly associated with time and workloads. However, a number of other approaches exist which are in some measure different to the full 'formal' approach. Fernandez (2005, 2006, 2010) evaluated Microteaching Lesson Study in which prospective mathematics teachers planned and taught research lessons to their peers. Microteaching Lesson Study was credited with leading trainees to develop less teacher-centred pedagogy, moving from 'telling' approaches (Fernandez, 2005, p. 42) to engaging students in 'discovery and construction of mathematics and concepts'. Other studies have used collaboratively planned peer microteaching to explore the complexity of teaching (Carrier, 2011). Some have explored development of prospective teachers' subject and/or pedagogic content knowledge. Cavey and Berenson (2005, p. 186) highlighted a trainee's subject knowledge development through 'lesson plan study' (LPS) and its potential impact on teaching: 'Molly's growth in understanding right triangle trigonometry enhanced her ability to "plan a lesson" and subsequently thickened her understanding of teaching mathematics.' However, their LPS ended with a plan and its presentation to peers, the process lacking the full LS 'formal' cycle of teaching, observation, evaluation and re-teaching. So, it is difficult to see how distinctive LPS might be from other approaches to developing subject knowledge.

Gurl (2011) highlighted the facilitating role of mentors in mathematics teaching placements but her mentors could not commit to supporting trainees in what they described as 'formal lesson study', presumably along the lines of the original Japanese model. So, they helped to plan but did not observe. Marble (2006, p. 92), looking at preparation to teach science, identified mentors' lack of familiarity with LS as an inhibiting factor but still reported many benefits from using LS in ITE such as the promotion of collaborative practice and reflection, and insights gained from focusing on students' learning and engagement in lessons.

As argued above, a Communities of Practice framework can be utilised as a theoretical lens for understanding ITE, and some studies have used it specifically for conceptualising the social nature of LS. Parks (2008, 2009) underlined the need to identify the quality of learning in LS groups in which trainees collaborate and that it is misleading to assume that collaboration is beneficial in all cases and contexts. Learning in LS, in Parks' view, was messy and collaboration *per se* did not always translate into 'deep explorations of teaching or the questioning of assumptions about students' (Parks, 2009, p. 94). Myers' (2012) study of 20 undergraduate mathematicians suggested that engagement in LS was no guarantee of reflection beyond the superficial and descriptive, leading her to conclude that attention from the mentor was essential so that the 'reflection goes somewhere' (p. 16, citing Atherton, 2011, p. 1). Tsui and Law's (2007) study of two trainee teachers of Chinese identified a number of challenges for a school–university partnership resulting from the competing objectives of university tutors and mentors, for example, trainees being overmentored by school-based teachers and university tutors before the lesson and then feeling heavily criticised when receiving feedback.

Whereas some studies highlight the constraints affecting the use of LS in ITE, most also suggest a strong positive impact. Kotelawala (2012)), in a study of early career teachers, argued that engaging in a community of enquiry through LS 'provided a rich structured format for teacher candidates to focus on the complexities that are a part of fine-tuning teaching practices in the classroom' (p. 85).

Despite generating great interest elsewhere, LS *per se* does not appear to have been used in ITE in England, with the exception of Davies and Dunnill's (2008) use of Learning Study with secondary trainees of design/technology and business studies, an approach that combines LS with the use of Variation Theory (about which, see the seminal work of Marton & Booth, 1997) to explore school students' learning outcomes. Despite the challenges of integrating Learning Study into ITE, Davies and Dunnill concluded that it had positive effects on the thinking of trainees, speeding up understanding of teaching and their role in supporting learning.

The reviewed studies above demonstrate that a number of different approaches with a foundation in LS have been used, but all have different emphases and have been developed to suit different contexts. Crucially, they all share an approach founded on a collaborative consideration of learning, a commitment to deepen understanding of lesson planning and engagement in collaborative evaluation. Benefits from engagement in LS were found in most studies and generally reflected those identified in studies of in-service programmes: greater understanding of curriculum content and student needs, benefits from collaboration with colleagues, development of ability to observe learning and increased confidence (Chassels & Melville, 2009, p. 747, referring to Lewis, 2003). However, there has been great variability in the methods and contexts in which 'LS' approaches have been used, with few examples of engagement in a full plan–teach–observe–evaluate and re-teach cycle. Conse-

quently, the impacts and their relationship to collaborative, social learning are not easily assessed in a comparative sense. Nevertheless, the overwhelming impression from close scrutiny of the relevant literature was that use of LS with trainees was believed to enhance the effectiveness of their preparation.

Research design

Our specific purpose was to explore how participation in LS enabled collaborative learning for both trainees and mentors. The research was qualitative, exploratory and inductive in its mode of enquiry. The questions that the study addressed were:

(1) How did LS contribute to trainees' integration into their host departments?
(2) In what ways did participants view LS as an enabling process for both trainees and mentors to engage in a collaborative approach to their learning?

Six schools of different types (11–14, 11–16 and 11–18 years) were approached through the school–university partnership. Following discussion of the process and likely impact on workload, two schools volunteered for the project and their trainees, after a meeting with mentors, also agreed. The research was undertaken through a cycle of two research lessons with trainee teachers of Geography and Modern Languages (ML) in two different secondary schools (11–18 and 11–14 years). The geographer (male) engaged in LS in his first block placement (November and December), while the modern linguist (female, in the 11–14 school) undertook LS in her second placement (March to May). Both trainees had completed university-based curriculum and methods courses that included collaborative planning, peer teaching and evaluation of the nature of learning in their subjects. In contrast to other LS projects discussed above, there was a pivotal role for the two school-based mentors, both with many years of middle leadership and mentoring experience. In addition, an early career languages teacher in her second year and a Geography teacher with 15 years of experience completed the LS team in the respective schools.

Before the LS cycle began, participants received guidelines about the LS process, drawing on Dudley (2011). Two of the research team (university tutors for Geography and ML) inducted mentors and trainees into LS with particular reference to the cycle presented in Figure 1. Stress was placed on the need to focus observation on learning and for participants' positive mutual regard particularly in the evaluation to avoid pitfalls encountered by previous studies, for example Tsui and Law (2007) who reported trainee anxiety resulting from negative feedback.

The basic stages in Figure 1 represent a record of how LS was interpreted within the school–university partnership. Each department engaged in an LS cycle of two research lessons, the first taught by the mentor, the second by the trainee to a parallel group. A distinctive feature in our use of LS was that mentors should teach the first research lesson (circle 3), an approach not found in our review of the literature. Thus, the experienced practitioner led the process, so that the trainee engaged as co-planner and observer in the first instance. Reflection (circle 4) and observation of case students (circle 3) were critical to the development of participants' deeper understanding of both learning and teaching. During the first research lesson taught by the mentor, the trainee and collaborating teacher observed three case study students for evidence of learning, making observation notes on a copy of the detailed lesson plan. Researchers were not present at this lesson but it was filmed to assist

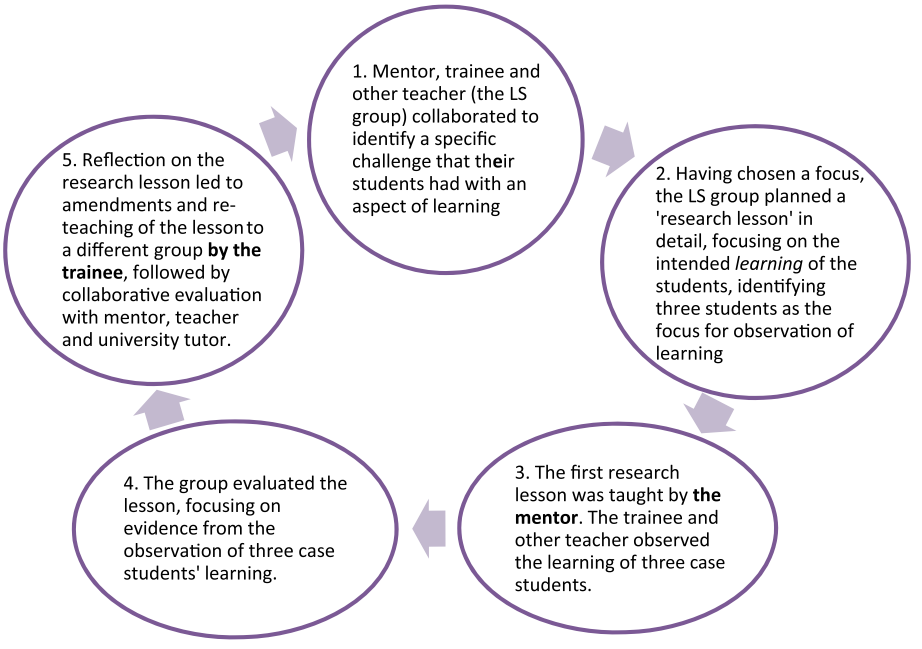

Figure 1. Outline of school placement Lesson Study process.

review and revision. Post-lesson evaluation meetings included discussion of learning observed and possible changes to the lesson, before its subsequent teaching to a different but parallel group by the trainee. Students in the trainee's lesson were observed by the LS group plus a visiting university tutor, a member of the research team.

Analysis of planning meeting transcripts (circle 2 in Figure 1) revealed that objectives and approaches to teaching were agreed following discussion of the learning challenges. The topic of the Geography research lesson with a Year 10 group was the protection of a coastline and associated management issues. The learning challenge involved making use of concepts understood in one geographical location and applying them to the analysis of another unfamiliar location. For ML teachers, the challenge lay in active use of target language for both task purposes and incidental use to meet routine needs in the classroom (a Year 7 French class), such as asking for teacher help.

Data collection and analysis

The data generated were qualitative and wide-ranging: recordings of meetings, observation notes, lesson plans/resources, and recorded interviews with mentors and trainees. In addition, there were DVD-recordings of research lessons to act as stimulated recall tools in evaluation meetings. Transcripts of planning/evaluation meetings and interviews were the principal data sources for our research. These were entered into an NVivo database and analysed independently by two of the authors. Because of the scarcity of previous research into the use of LS in ITE contexts, we lacked sufficient empirical or theoretical justification for developing a deductive mode of

data analysis based on the prior specification of categories. Instead, we worked with our data inductively attending to the terms used by trainees during meetings and interviews. This inductive mode of analysis, with no pre-conceived analytical categories, was central to identifying the content and management of participants' talk, when jointly planning and evaluating lessons.

From initial readings of the transcripts by two members of the research team, a number of 'content' themes were identified that were common to both the Geography and ML contexts. The transcript data were 'chunked' into stanzas (Gee, 2011), and then analysed for themes. Using themes as the basis for analysis, two further inductive sweeps through the meeting transcripts led to agreement on the following principal categories, which dominated the discourse in planning and evaluation meetings:

(1) Discussion of the learning challenge.
(2) Approaches to teaching (including tasks and resources).
(3) Possible challenges to learning/teaching, e.g. difficulties/misconceptions.
(4) Specifying what students should do.
(5) Discussion about the students' approaches to learning.
(6) National Curriculum levels and assessment of learning.

At the end of the eight-week placement, researchers conducted individual exploratory interviews with trainees and mentors to elicit their accounts about the effects of LS on their development. Since we had no grounds either for assuming the effectiveness of LS in ITE or for predicting the kinds of things participants would say and because we were committed to developing understanding by attending to the ideas and terms that participants used in their accounts, we chose to explore participant perspectives through an informant style of interviewing (Powney & Watts, 1987). Mentors and trainees were asked to recall and recount their engagement in LS and describe its consequences for their practice and development. The interviews, conducted by researchers who did not teach the trainee, were first independently coded by two researchers before transcripts were subjected to comparative analysis (Powney and Watts, 1987, pp. 165–167) by the entire research team, using 'themes' as the unit of analysis. Five broad themes were agreed:

(1) Collaboration in LS.
(2) Observing learning and giving feedback.
(3) Effects on participants' thinking (e.g. confidence/reflection/long-term plans).
(4) Amendments to teaching attributed to the LS process.
(5) Effects on department/school (wider impact).

A third sweep through the interview data by two other members of the research team revealed that themes 1–3 were the most dominant and that themes 4 and 5 could be subsumed within theme 3. The three themes relate back to our research questions about integration into departmental ways of working and collaborative learning. As a result, they are used to structure the following sections which report perspectives of trainees and mentors about the usefulness of LS, drawing largely on the interviews but with reference, where appropriate, to issues discussed in planning/evaluation meetings.

Collaboration in LS

In planning meetings for the first research lesson, discussion was facilitated by mentors with content dominated by two issues: the learning challenge generally couched in terms of what learners found difficult, and approaches to teaching, usually macro-structures of lessons and tasks/resources to be used. Superficial analysis of planning/evaluation meetings in both schools showed that trainees made fewer inputs to the conversation than mentors and collaborating teachers, not surprisingly. However, while hierarchies deriving from position and experience among the participants were maintained in discussions, trainees saw suggestions welcomed and adopted by their mentors, for example the use of flashcards to support vocabulary learning. Both reported that they felt comfortable in such meetings:

> I felt comfortable and confident … I felt that my opinions would be valid. (ML trainee)

While the Geography trainee's contributions were few in number of conversational turns, most of his suggestions were adopted and he was convinced that collaborative planning was important to his development in a community of supporting practitioners, implying that LS enabled him to engage as a central participant in a 'joint enterprise':

> … you're all on an equal playing field … trying to piece it together. He [the mentor] was exactly on the same level as myself, so the ideas that I suggested and the ideas that he suggested and the ideas C suggested, … I felt more of a teacher … because my suggestions and my ideas were all relevant to this particular challenge and all were being taken on board. (Geography trainee)

The ML mentor used prompt questions in the first planning meeting to elicit ideas for each phase of her research lesson. For many teachers, a tripartite organisation of lessons (starter–main–plenary) has been a quasi-mandated feature of practice in English schools for a decade or more, since the model was first developed as part of the National Numeracy Strategy (DfE, 2011) in 1999. Since then, it has been in use across the curriculum, particularly at Key Stage 3. OfSTED (2003, p. 14) reported that teachers had adopted a three-part lesson structure in almost all schools. This 'orthodoxy' was not questioned during preparation/evaluation meetings. Consequently, discussions about foreign language lessons were shaped around the ingredients of the lesson in starter–main–plenary terms. Nevertheless, what emerged for the trainee was clarity about the direction of the lesson and a feeling of being engaged in greater reflection:

> We … all knew exactly what the lesson was, content etc. Thinking about learning moved on … definitely made *us* think more. (ML trainee)

The trainee's discussion of the evaluation meeting also suggested that the lesson was viewed as a shared enterprise by a collaborative pedagogic team:

> … me and the other class teacher, we gave *our* feedback, or we shared *our* feedback and then the class teacher, who was the head of department sorry, gave their opinion, how they felt, and actually *we'd* over-planned the lesson, it was too much for the one lesson, so that was where *we* focussed, ok, how can *we* get it to fit in.

She participated actively in the co-planning and critical evaluation of the mentor's research lesson, not acting in a peripheral way. Furthermore, for her research lesson, the context of the observation was less threatening than had occurred in her first placement:

> It's not just me being judged … it's not a lesson that *I've* just planned … it's not all on me if it's a rubbish lesson … it just made me feel a lot more comfortable … because it can be a really big thing being observed and the stress of it can make you, make the difference in performance.

Confidence resulting from collaboration and engagement with those more experienced contributed to a belief that she had benefited ('definitely beneficial') more than in the 'traditional' experience of her first placement. Consequently, anxiety was lowered:

> Even though it was an observation with my co-tutor, I felt quite confident, it's not me being judged because they are looking at the students and it's not a lesson that *I've* just planned.

Teaching a lesson that evolved as part of the department's shared repertoire reduced the geographer's anxiety when teaching his research lesson, unlike the experience of a traditionally-planned lesson (which he also experienced during the placement):

> The weight off my shoulders was, I didn't think about it. It was just go in, do the lesson and then get the feedback at the end about *this whole process* rather than it being focussed straight at me. (emphasis added)

The Geography mentor reported strong positive impact; never before had he encountered such assurance in a first placement trainee, making a significant contribution to student learning:

> … if any other of my colleagues had come in … you wouldn't have known he was an ITE teacher with only a few weeks of experience. Because he was confident, the lesson was beautifully managed, structured and so on like that. The students were responding to him all the way through, you were looking at an experienced teacher.

Both mentors suggested that LS was a powerful means to engage trainees and other colleagues in deeper exploration of pedagogy than was usual in teacher development initiatives. This reduced the ML trainee's level of anxiety in her second placement and, in the opinion of the mentor, led to the geographer's approach being unusually assured for a first placement.

Observing learning and giving feedback

The opportunity to offer feedback to the mentor was a developmental opportunity for both trainees:

> What I enjoyed most was the meeting at the end, everyone gave ideas, … it's been like a team coaching exercise not only for the experienced teacher. It's the same process as happened for me … it felt like we were all on the same level which was really quite nice and … enjoyable! (Geography trainee)

Trainee-initiated conversational turns in evaluation meetings about the first research lesson were greater than in planning meetings because they reported their observations about learning. For the geographer, the observation of learners opened up the processes involved in linking planning, teaching and evaluation of learning:

> When you've just got that one focus [the learners] because you've already discussed the other two [planning and teaching], you can then start to channel and pick up a lot more things that, that I wouldn't have picked up.

Giving feedback about learning led to reflection about pedagogy:

> … it gave me not only an insight into how to think about how this lesson could be improved, it also got me thinking more as a teacher how, how could I do this a little bit differently, how could this benefit the class better? (Geography trainee)

The ML mentor thought that close observation of three learners and how their learning unfolded at each stage of the lesson made observers 'more open to what is going on in the classroom' and led to unexpected insights. For example, one boy, previously considered disengaged, had demonstrated that he was attending to lesson content and offered responses using the foreign language in ways not previously appreciated by his regular teacher.

For the trainee, however, observation was challenging as she was not confident that she had been prepared for the task of noting what a child was learning:

> We just had an annotated plan and wrote down exactly what the pupil was doing at each stage which was actually quite challenging to write down *EXACTLY* how because if it was listening …? … how do you prove that they know it? (ML trainee)

The challenge of observing student learning was the subject of discussion in the evaluation meetings:

> We didn't come up with an answer but it definitely made us think.

The ML mentor also recognised that observation in LS contrasted sharply with her previous observer experiences:

> And I think as a department when we observe each other it's observing what's going on more with the activities in the class rather than the reaction of the pupils. And I think focussing on how pupils respond is … is better really, isn't it?

She also found that a change of mentoring practice was needed because she was tempted to refer to what the trainee did when giving feedback, as in performance-focussed observation. Another cycle would have been beneficial; they would have 'got better at it and refined the process' but the eight-week duration of the placement limited opportunities.

Despite shortcomings, participants believed that observations of learning in the classroom led to greater understanding of pedagogic practice. From a Community of Practice perspective, LS was seen as a collaborative learning project that opened a window into the complex processes of learning and teaching, with a focus on helping trainees learn how to learn from engagement in practice (Hiebert et al., 2003).

Participants engaged in 'opportunities to question, explore and reflect on every phase of the teaching and learning process' (Cerbin & Kopp, 2006, p. 250).

Effects on participants' thinking

Mentors claimed that collective learning had occurred. The Geography mentor noted the impact on his trainee's integration, attributing the high level of confidence and assurance to collaboration in LS:

> That was quite startling and it was that confidence that seemed to be generated within the student because … He'd seen this lesson already taught by me, he'd been part of the planning with me; he had made suggestions. (Geography mentor)

This contrasted with his experience of 'directive' forms of ITE in which the onus is principally on trainees to plan (albeit, with support) and perform well under observation. He judged LS not only useful for developing the trainee, but also a professional development tool for his own and other colleagues' practice. Like his ML counterpart, he saw working in this close collaborative way as potentially helpful to enable teachers to regain flexibility and responsiveness:

> I think somewhere along the line teachers lose confidence and young teachers are willing to make mistakes and learn from that. But somewhere along the line they [teachers] almost feel that there's a right way to do this and a wrong way to this and I've got to be very careful to do it the right way … it's breaking through that.

The mentor saw the process as useful for his Year 10 students, believing that the research lessons had impacted positively on their experience as well as that of the trainee, and he would be pressing the school 'to take it on as part of a bigger coaching thing.' He was determined to use LS with future trainees:

> Now, I'm already planning that … my phase B [second placement] student-teacher will have two year 10 classes so that will be all of our year 10 classes will have had part of this process worked with them, so I can take it further with that group.

In ML planning meetings, although the department continued to structure discussion around the tripartite starter–main–plenary lesson structure, what emerged was a stronger focus on learner-oriented issues, with the mentor's frequent use of 'hinge' questions of the kind 'what works best for them?' or 'what's going to move their learning on?' Previously, the emphasis had been on approaches or artefacts such as schemes of work and resources not on 'how pupils respond'. The ML mentor described the process as an 'eye-opener', which should be used from the outset in ITE programmes, even in a first teaching placement when observation of case students was particularly valuable, making trainees 'more sensitive to how they [students] are reacting when you are in the classroom'.

The mentor experienced an unexpected reaction when co-planning her research lesson, finding it challenging to incorporate her colleagues' suggestions into her teaching. In the planning meeting, her LS group had suggested approaches that were relatively new or infrequent in the mentor's practice, e.g. using flashcards to support vocabulary learning. The process was thus an opportunity to review her own pedagogy.

Geography and ML mentors suggested that LS has the potential to act as a tool for the simultaneous development of both trainee and experienced staff. What was missing from the process in this project, however, was feedback from students in the classroom about the effectiveness of the research lessons for supporting their learning. That was not the purpose of this case study as the research questions were couched specifically in relation to the development of trainee learning and professional dialogue. Eliciting student feedback had been discussed with mentors when preparing the project but they decided not to incorporate this in their first use of LS. However, as they gained in confidence during the project, participants felt that seeking student feedback would be an appropriate and useful future activity on which they could draw for greater understanding of both learning and the impact of their approaches. As a result, the mentors had plans for inclusion of student feedback not just in ITE but also when using LS for continuing professional development in their departments. In future LS projects, we plan to explore the practical challenges and possibilities of building in opportunities for students to be involved with their teachers in the lesson study process, contributing ideas to the planning and evaluation of lessons. An important focus of this future research will be on how teachers interpret and respond to their students' ideas, especially the criteria and principles teachers apply to decisions about which students' ideas to select and adapt for inclusion in lessons and their more general perspectives in relation to working with pupils to plan and evaluate lessons.

Participants' perspectives suggested that LS offers an approach which engages all members of the team in the evolution of a lesson as 'joint enterprise', bringing both affective and pedagogic benefits, tellingly captured by the following statement:

> … it sounds crazy but … I felt more of a teacher, it's probably the most I've felt like a teacher or a teacher that has been teaching for a while, because my suggestions and my ideas were all relevant to this particular style and all were being taken on board. (Geography trainee)

Echoing Fernandez (2005), the Geography trainee credited LS with moving him away from 'barraging the class with information' with consequent benefits to student learning:

> I expected everyone to be like a sponge and it's got them focussed more on the lesson I've given them, got them involved as a group, individually and … and they learn more.

He was keen for his next practice to include LS, such was his conviction of its value. On the other hand, his ML counterpart could contrast LS with her 'traditional' first placement in which she would usually plan alone, have the plan checked by a mentor and then further refine her approach following the feedback. This 'parallel' approach to ITE is typical of many trainees' experience, offering limited opportunity to collaborate in the process by which lessons are conceptualised and realised. As a consequence, the development of planning and teaching activities becomes an individual 'trial and error' process as the trainee interprets feedback before subsequently gauging whether that interpretation was accurate at the next observation or meeting point. In her first placement, perhaps the ML trainee had remained peripheral for longer without the joint LS activity to draw her towards the centre of the community

in meaningful ways. In the second placement, LS had, in her view, helped her to bridge the gap and settle more quickly into teaching.

Discussion

Participants believed that LS offered a number of positive opportunities comparable to those identified in other studies. In the studies of Fernandez (2005, 2006, 2010), Microteaching Lesson Study realigned trainee thinking in making classroom practice less teacher-centred, an effect reported by the Geography trainee. Sims and Walsh (2009) claimed that LS reduced concerns about failure and facilitated reflective practice. Participants in this study suggested that they benefited from participative discussion about pedagogy and a collaborative approach to learning in ITE, in a supportive community in which all were learners focused on the improvement of pedagogy, not just the training of a prospective teacher.

Any claims must remain cautious and provisional as this project continues with further studies of LS in more schools with a wider range of mentors and trainees. Nevertheless, participants' perspectives encouraged us to believe, albeit tentatively, that LS developed 'mutual engagement' through a form of 'team-pedagogy' within the respective departmental communities. Starting from a position of legitimate peripheral participation, trainees interacted with colleagues in a context where explicit discussion about learning and teaching – the 'joint enterprise' of the community engaged in the LS project – allowed for gradual development of understanding of pedagogic processes and induction into the use of the community's resources and ways of thinking and working, i.e. the 'shared repertoire' of the departmental community.

Thus, the construction of pedagogy is made clear in LS, from debates about problems with learning, through planning and how plans relate to the action of learning. This can be seen as an explicit meta-cognitive exercise where the thinking of more experienced practitioners is made explicit, and through the collaborative medium of LS, is challenged, questioned and added to by the trainee. Therefore, the trainee is less reliant on 'trial-and-error' approaches as often happens in school placements, but is exposed to the pedagogic thought of those with whom they work. In addition, making the link between planning and the physical act of teaching (i.e. the observation), as well as evaluation, allows the meta-cognitive thought process to be closed in a cycle of pedagogic endeavour. This not only allows trainees to move more rapidly towards the centre of the Community of Practice, both conceptually and linguistically, but also opens up the complexity of the pedagogic process to greater understanding and critique. This complex system of classroom-oriented processes is what we would identify as the 'pedagogic black-box', which can remain either partially or wholly shut in individually-oriented teacher placements. As part of an LS community, it is opened up to deep collaborative scrutiny. This, in our view, is the distinctive contribution of LS to the quality of experience in the school placement, and marks the difference between this and traditional forms of mentor–trainee interaction.

This is a paper about perspectives so one can argue that similar effects (e.g. trainees feeling greater confidence) could be found from other traditional ITE activities. However, the ML trainee had experienced both and was convinced of the impact of LS on the quality of teaching. Furthermore, the mentors, both experienced

and successful in ITE partnership work, were equally convinced and have continued with cycles of LS in their departments. As a result, the process merits further investigation in more detailed and longer-term studies.

The discussions and processes involved in developing research lessons by this Community of Practice were extremely complex. While participants were positive about LS, some of the learning taking place was embedded in ways which were difficult to elucidate, and as such the 'messy' social context (Law, 2004), of which LS is a part, made the exploration of learning dynamics within the teacher teams problematic. Looking at the discussions through the lens of the Community of Practice led to a focus largely on collaborative learning, possibly omitting individual trains of thought and hence important aspects of learning. A focus on the social level of integration draws largely on teacher reports and does not tackle some of the complexity which appears to mark out the processes inherent in LS. An area in which our research will develop is to understand the interplay between personal and social learning within teacher groups. Illeris (2007) demonstrates that any learning process is an amalgam of three dimensions (the individual, the emotional and the social). The social is perhaps the easiest to interrogate as it is laid bare by the interaction of those involved; the individual and emotional are more complex to capture and understand. As a result, other approaches to data collection and analysis seeking to find lenses which embrace a more nuanced and complex analysis of the impact of LS need to be explored. Future research could usefully engage participants in interpretive analysis of the data, perhaps with stimulated recall dialogues.

Given the multiple data sources afforded by LS, research could move in several directions apart from focusing on participant perspectives about LS. We acknowledge that thematic analysis of planning/evaluation meetings and interviews only revealed a part of a complex story of interaction and development. For example, a future paper is planned, reporting detailed discourse analysis of meeting transcripts (drawing on Gee, 2011) to explore the kinds of interactions that lie at the heart of collaboration in LS.

Nevertheless, and despite its small scale, this was one of the most complete applications of LS in ITE, enjoying three advantages over many previous studies:

(1) In-school planning of two research lessons targeting learners' needs (as in 'formal' Japanese LS), after a methods course that included collaborative planning and peer teaching.
(2) An LS cycle managed by the mentor who taught the first research lesson.
(3) Observation of learners known to the trainee and collaborative evaluation of their learning.

These conditions suggest that a 'strong' formal form of LS, by which we mean a cycle of planning, observation, evaluation and re-teaching following the original Japanese model, is possible and potentially valuable in school placements to enable bridging of the theory–practice divide in school-led ITE. Mentor and trainee confidence in the outcomes led us to conclude that LS offers a productive model for school–university partnerships in ITE, offering a collaborative complement to the 'parallel' approach in which the trainee plans, teaches and evaluates lessons as an individual, with periodic support from the mentor.

Conclusion

LS provided not only support for trainees to acquire 'tools they will need to learn to teach rather than the finished competencies of effective teaching' (Hiebert et al., 2003, p. 202), but also professional development for mentors. On the evidence of these case studies, LS has the potential to bridge gaps between theory and practice and between trainee and experienced teachers by offering a structured opportunity for collaborative learning that explores pedagogy in greater depth than a 'parallel' approach to trainee support. The latter does not necessarily integrate trainees into the discourses and working practices surrounding learning and teaching, possibly leaving them detached from the detailed existence of the departmental group. In such circumstances, trainees often learn by trial and error, creating their own understandings of the links between planning, teaching and learning, supported by comments from mentors which are temporally detached from the activities themselves. Some trainees develop quickly in this environment, others may not.

LS in ITE is a work in progress and needs further studies to assess its impact on learners and to evaluate the extent to which aspects of the approach lead to improvements in ITE. In future projects, the nature of learning and what to record would need greater consideration than was afforded here, possibly by focusing more on the observation of learners during peer-teaching activities in the university.

The theoretical context of LS also needs further consideration. Although Communities of Practice offer one way of understanding the collaborative nature of the process, it does not make explicit the nuances and complexities involved in the meta-cognitive aspects of LS, assuming instead that learning is predominantly located in the interactive dimension of the process. LS must be tested using other conceptual frameworks to give a multi-layered perspective on what is an inherently complex process. We can then arrive at a deeper understanding of the dynamics which, in these two school placements, made LS apparently so successful.

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