

The feasibility and effectiveness of using 'lesson study' to investigate classroom pedagogy in initial teacher education: student-teacher perspectives

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'Lesson study' is commonly used by teachers in Japan as an approach for improving student learning through collaborative development of lessons. This research project studied the feasibility of incorporating it into initial teacher education (ITE) and its effectiveness as a vehicle for collaborative exploration of the pedagogic cycle (planning-teaching-observation of learning-lesson evaluation and refinement) by student-teachers and mentors. The basic approach to lesson study centres on a group of teachers working together to identify a learning challenge faced by students which they then work on to improve the teaching and learning in that area. The teachers work together to design a research lesson, which is taught by one of the group and observed by the others, usually with a focus on two or three case students. The evaluation of the lesson draws on the observations of student learning in order to revise the lesson (or prepare subsequent lessons) for teaching to a parallel group. Typically, a lesson study cycle will follow the following stages:

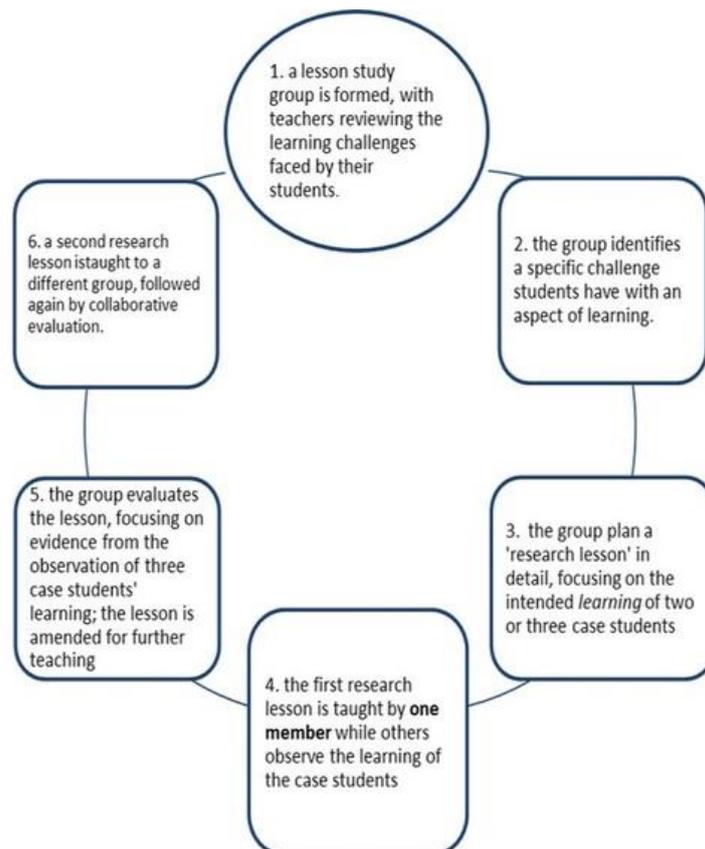


Figure 1: the lesson study cycle

This model, often with variations to the above cycle, has been applied in ITE and there is growing interest in evaluating the potential of lesson study to support the development of prospective teachers (for example Tsui and Law 2007; Chassels and Melville 2009; Sims and Walsh 2009; Fernandez 2010; Myers 2012). Lesson study, it is argued, offers prospective teachers opportunities to prepare for teaching in learner-responsive ways. Typically, an LS cycle involves a small team of teachers planning a 'research lesson'. The lesson, not the teacher, is subjected to systematic analysis by participants, hence the name '*research lesson*'. One team member teaches while the others observe usually for effects on pupils' learning (Dudley 2011). In Dudley's use of lesson study, the focus of observation is two or three pre-identified case students. The few evaluations, conducted to date, suggest that using LS in ITE contributes significantly to student-teacher development (for example, Chassels and Melville 2009; Myers 2012).

Theoretical framework

When considering how we should educate teachers so that they are able to cope with the unexpected and to meet the challenge of teaching in a rapidly changing world (the ATEE conference theme for 2013), the context of initial teacher education in many parts of the world does not appear to offer particularly fertile ground for development. Content of programmes and what constitutes effective teacher education are subject to frequent dispute (Hardman 2009), not just in England but across the world, placing huge pressures on teacher educators (Ben-Peretz 2001). The debate continues about what should be the focus of our attention. In England, teacher programmes are beset demands for evidence that teachers are meeting craft skill competences (DfE 2012) despite arguments for more holistic views of what it means to become a teacher. Farrell argues (2006, 218) that teacher education programmes should work on what it means to be a teacher rather than on the transmission of competencies. Hiebert, Morris and Glass (2003, 202) argue that programmes need to prepare new teachers for continual learning, not just to be 'equipped' with a given set of teaching skills (increasingly measured through ticking off nationally mandated competencies and standards):

'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.'

This will provide for a much more sustainably reflective and creative teacher workforce. How can this be facilitated within already crowded teacher education curricula? Lesson study is 'a systematic investigation of classroom pedagogy conducted collectively by a group of teachers rather than by individuals, with the aim of improving the quality of teaching and learning' (Tsui and Law 2007, 1294). To what extent does it have the potential to help student-teachers 'acquire the tools they will need to learn to teach' (Hiebert et al. 2003, 202) rather than just acquire an individual set of 'finished craft' skills? How effective can it be emphasising and supporting sustained engagement in the reflective study of pedagogy? This would mean that by the end of an initial teacher education we should not expect finished products but people prepared to continually engage in learning to teach in a changing world.

Influenced by such questions, we piloted the use of lesson study with student-teachers of geography and modern languages, as part of a publicly-funded research project. In partnership with several secondary schools (11-16 or 11-18), we sought answers to the following questions:

- How does lesson study led by school-based mentors contribute to student-teacher development?
- How does lesson study used in a teaching practice enable student-teachers to engage with pedagogy and to integrate into the departments in which they are placed?

Our overall principal aim was to evaluate a model of lesson study piloted in teaching placements but this paper focuses in particular on:

- a) explaining the model which we used and
- b) reporting student-teachers' perspectives about their experience of lesson study.

Lesson study in ITE

Although lesson study has its origins in Japan, its use is increasing elsewhere, including in initial teacher education programmes. Studies have been conducted outside Japan, for example in the US, Singapore and Canada, a growing number with trainee teachers of mathematics (for example MacMahon and Hines, 2008; Ricks 2011, Parks, 2008). Broadly, initial teacher education lesson studies can be divided into two groups, those achieving the full cycle of collaborative activity of planning-teaching-observing learning-evaluating and re-teaching, what one might call traditional lesson study cycles, and those that use adaptations or make partial use of lesson study.

Consequently, studies describe approaches of varying sizes and frameworks. For example, Tsui and Law (2007) evaluated two cycles of lesson study with just two trainee teachers of Chinese. Rock (2003) conducted a study with 8 prospective teachers of elementary school social studies with one cycle in the school, while Chassels and Melville (2009) worked with 60 primary teachers over a four-week teaching practice placement. Other studies demonstrate how there can be significant variation in the amount of time devoted to the lesson study cycle. McMahon and Hines' (2008) 8 student-teachers, for example, completed the cycle in one day. Some projects may only include one research lesson with no opportunity for re-teaching (Parks, 2008, 2009). Inevitably, contextual constraints on programmes play their part in determining the model of lesson study used but the above studies reported some successful outcomes.

Some researchers, on the other hand, have experimented with modified forms of lesson study that are less reliant on the traditional cycle of collaborative planning-teaching-observation-evaluation. For example, Fernandez's (2005, 2010) and Carrier's (2011) use of microteaching lesson study (MLS) does not involve in-school teaching but peer-teaching in preparation for the placement. Again, positive outcomes have been reported from such adaptations; modified forms of lesson study applied in ITE have generally regarded as effective. Sims and Walsh (2009, 731), whose student-teachers taught research lessons but could not be observed by their mentors, concluded that engagement in an adapted form of lesson study can be effective in developing reflective practice and reducing concerns about failing the teaching placement. They concluded that their modified form of lesson study allowed trainee teachers to get 'a true glimpse of what it means to learn from teaching' (2009, 732).

Two significant observations about lesson study in ITE can be drawn from even a brief study of the growing literature in this area. The first is the crucial role of the mentor in their willingness to explore pedagogy and devote time to collaboration with trainees (Gurl 2011; Marble 2006), while questioning their own assumptions about teaching and learning. Lack familiarity with lesson study procedures has been identified as a constraint (Marble 2006, 92) which can also result in tokenistic or rather shallow forms of engagement and limited reflection (Parks 2009, Myers 2012). On the other hand, over-mentoring can result in unhelpful pressures on student-teachers (Tsui and Law 2007). Secondly, the literature strongly suggests that while there is a

wide variation in the way lesson study has been used in ITE, all approaches using lesson study are underpinned without exception by a desire to secure a collaborative and critically reflective approach to pedagogic development (Rock 2003; Marble 2006; 2007).

The project

We used Communities of Practice as the lens through which to study student-teacher perspectives about the impact of lesson study on their development. In Communities of Practice, mutual engagement (Wenger 1998), interacting and thinking together, is an important guiding concept. We were interested in how student-teachers settled into their roles in a process of *mutual engagement* (Wenger 2000), in association with a mentor, working on planning and teaching. Wenger (2000, 227) describes such collaboration as 'doing things together, talking, producing artifacts'. The result of engagement in a collaborative lesson study project should, if successful, lead to the student-teacher not just gaining in pedagogic expertise but also feeling part of a pedagogic community of practice. This entrance into the community is, according to Wenger, a critical condition for the development of professional skills through collaborative enterprise. An important challenge for student-teachers is understanding the links between artifacts such as lesson plans and learning resources and the underlying pedagogic principles which inform both planning and teaching. Our model of lesson study was set up to enable student-teachers and mentors to work together in a '*joint enterprise*' (Wenger 1998, 73) with the objective of designing, teaching and evaluating 'a set of shared resources or '*shared repertoire*' (Wenger 1998, 73), in this case a cycle of research lessons. Lesson study, we speculated, could contribute to the student-teacher's scaffolded engagement in the study of pedagogy.

Thus, in this project, Communities of Practice provided the framework for evaluation of lesson study as a vehicle for inducting student-teachers into pedagogic practices and reflection. In a school placement, the student-teacher begins as a novice peripheral member of the teaching team; we sought to evaluate the extent to which lesson study provided a vehicle for accelerating the induction of the student-teachers into the school's pedagogic practices. Induction into the process was done at specially convened training meetings informed by reference to the Lesson Study UK website (<http://lessonstudy.co.uk/>) and the *Lesson Study Handbook* (Dudley, 2011). In theory, participants (student-teachers and their mentors) followed the plan presented in Figure 2 during 2 8-week teaching practice placements in partner schools.

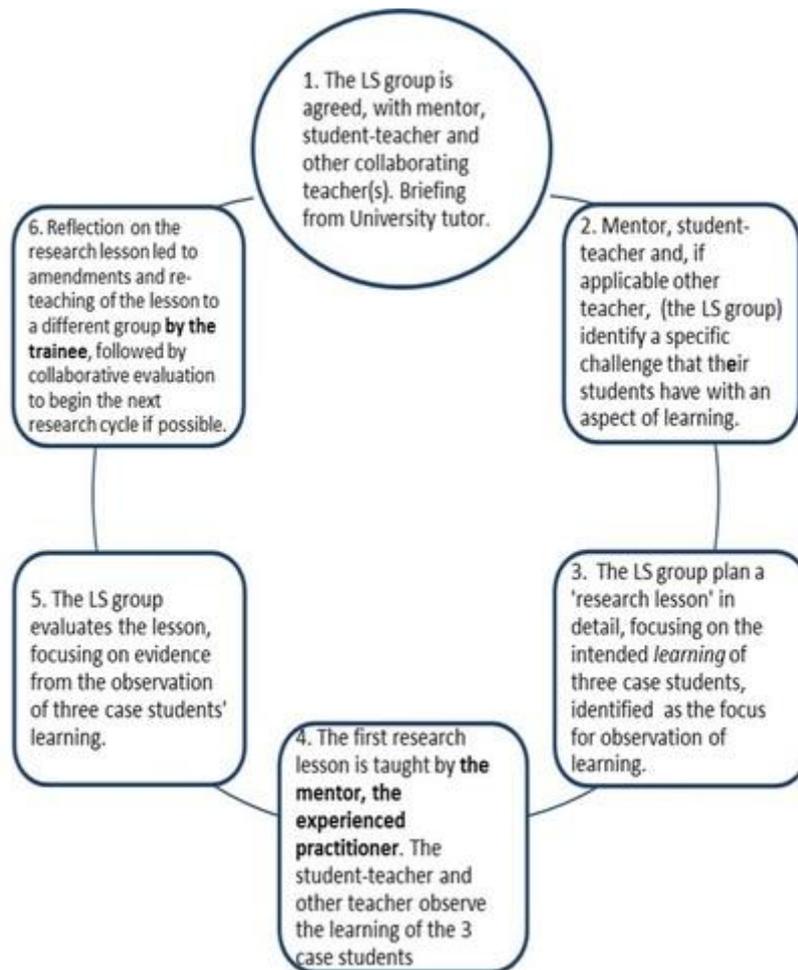


Figure 2: Teaching placement lesson study cycle

In stage 1, mentors and student-teachers were introduced to the lesson study cycle of lesson, with particular attention given to the need for collaborative planning of a lesson to meet an identified learning challenge. Stages 2 and 3 covered the planning of the research lesson in preparation for the mentor to teach (stage 4). During the teaching of the lesson, observation by the student-teacher was learner-focused. This lesson was then reviewed and revised so that the amended version could be taught to a parallel class by the student-teacher. The university tutor attended the research lesson taught by the student-teacher (stage 6). When observing this lesson, the university tutor, like the mentor and any other observing teacher, focused on the learning of two or three case students, jointly identified before by the student-teacher and mentor. Significantly, the focus of observation was not directly on the performance of the mentor or student-teacher. This was the blueprint for the use of lesson study in placement schools. The participants' experience included:

1. a university methods course that included collaborative planning and peer teaching as well as detailed training sessions to learn about lesson study
2. time for joint planning and evaluation integrated into the teaching placement

3. the opportunity for at least two research lessons during the teaching placement, the first taught by the mentor, the second taught by the student-teacher following collaborative evaluation of the mentor's lesson.

This programme differed from those described in the other studies reviewed above in that student-teachers had the opportunity to work with mentors who taught the first collaboratively planned research lesson. We have not found other studies in which this was possible. We explore below how student-teachers responded to the initiative.

Methods

In 2012-13, case studies of 12 student-teacher/mentor pairs participating in lesson study as part of an initial teacher education programme were concluded; we had originally set out with the hope that twenty mentors would volunteer. In the event, 16 projects began, but only 12 were completed (11 women student-teachers, one male). Seven participated in their first placement (autumn, 2012), with a further 5 in the second placement (March-May, 2013). As a result, each of the participants had one placement with lesson study and one without. Three worked in triads (student-teacher, mentor and another collaborating teacher), while nine worked in pairs with the mentor.

Our evaluation of the model and its impact on student-teacher and mentor development was qualitative and inductive, drawing on analysis of recordings of mentors and student-teachers planning and evaluating research lessons, their observation notes, DVDs of research lessons and artifacts such as lesson-plans/resources. At the end of the school placement, twelve individual informant-style interviews (Powney and Watts, 1987) elicited accounts about professional learning in lesson study and their experience of the process. Student-teachers were asked to recall their engagement in the process and its consequences for the development of them and their mentors. At the end of the whole programme (which lasts one year), student-teachers were brought together for focus group meetings during which they discussed their experience of teaching placements with and without lesson study. While we collected a variety of data that the cases generated for this project (see table 1) the interview and focus group data are the principal sources for this paper.

Activity	Planning Meeting	➔	Lesson	➔	Evaluation Meeting	Interviews
Methods	<ul style="list-style-type: none"> • Audio record • Save outputs • Plans • Resources 		<ul style="list-style-type: none"> • Video • Observation notes • Student work • PowerPoints 		<ul style="list-style-type: none"> • Audio record • Amendments • New plan (if applicable) 	

Table 1: data generated in the lesson study placements

Drawing on the end-of-project informant-style interview and focus group meeting transcripts, we report whether and/or how LS has impacted on student-teachers' development as practitioners as part of the evaluation of our model of LS in ITE. Transcripts were analysed by the two researchers and interpreted through the lens of Communities of Practice (Wenger 1998, 2000). In particular, we focused on how student-teachers perceived lesson study in relation to their:

- a) integration into their subject teaching roles
- b) learning about students
- c) impact on pedagogy

The interviews were subjected to independent analysis by the two researchers who segmented each transcript into idea units (Tsui and Law 2007) which were then coded. Two sweeps of the data were made in this way, with the researchers agreeing the coding of 769 idea units (91% match after the second round). Analysis of other data is ongoing.

Findings

Findings reported here are interpreted from the transcripts of the 6 geography and 6 modern languages student-teachers. Several themes emerged from student-teacher interviews, following comparative content analysis (Powney and Watts 1987, 165-67) by the two researchers (see table 2).

	Themes	% of idea units
1	Impact on practice and teacher learning	24.2
2	Teaching approaches (pedagogy)	22.6
3	Student participation and progress in lessons	16
4	Student-focused observation (engaging in observation)	12
5	Collaboration	12
6	Potential of lesson study incl. constraints	7.5
7	Summative evaluation of lesson study	5.5

Table 2: Themes from analysis of post-lesson study interviews

Discussion focused principally on the impact on student-teachers' learning and their practice. In relation to this, pedagogy featured very strongly (themes 1 and 2). The observation of student learning and their responses (participation) were important themes (3 and 4), with focus on learning very strong although often somewhat vaguely expressed.

How lesson study facilitated integration into departments was rarely explicitly mentioned, although 12% of the idea units focused on the nature and value of collaboration in lesson study and its impact on student-teachers' feelings about access to expertise and support. This related to the induction function into pedagogic practices that we expected that lesson study might fulfil. However, was this an artefact of the idea of Community of Practice, facilitating student-teachers' movement from the periphery to the centre of the pedagogic team? In an effort to understand further the development of student-teachers through lesson study, we discuss findings under the three headings on page 7:

- a) integration into their subject teaching roles
- b) learning about students.
- c) impact on pedagogy

Integration into teaching roles

The informant-style interview approach (Powney and Watts 1987) did not ask direct questions so we did not ask how well the trainees felt integrated into their subject departments and this was not mentioned explicitly by the trainees. However, collaboration (theme 5) related strongly to this heading and was discussed by all participants as being a significant beneficial feature of lesson study in relation to supporting their understanding of teaching and learning. In two cases, we learned that the mentor began with preconceived ideas about what should happen (confirmed by study of the mentor's interview and the planning meeting transcript) but in the other ten cases student-teachers felt that the approach was open and consultative in an attempt to work together to identify learner challenges and varying degrees of learner-responsive teaching. When engaging in discussion with mentors about pedagogy, however, there was nervousness and initial contributions from trainees were described as tentative e.g. by H, a modern linguist (ML) in her first cycle of lesson study:

I think looking back I wasn't very confident with maybe making a suggestion because I didn't feel like a professional. (H, ML)

In her school, a second cycle was concluded allowing her to grow into her professional role with greater assurance than at the outset:

I kind of felt a bit more confident that to make more suggestions on what I think would suit and especially in the reflection sessions, like after I'd observed J [mentor] and how I could adapt it to my group. (H, ML)

This resulted in her assertion that by the end of her placement the process of lesson study had:

[Lesson study] made it more clear what I have to do and you know about lesson structure and how to teach. And I even, I think J [mentor] said to me at the end of second cycle she noticed that I was more confident in myself, just contributing ideas and things like that... (H, ML)

A geographer (E) felt similarly about her development and gradually increasing level of contribution to the exchange of ideas while working in a lesson study triad:

And he had some really, really good ideas that P [mentor] used in the first one – and at first I was a bit like oh well I don't know if I can say maybe we shouldn't do it like that but then the second time that we did it when I – it was just me and no it was all three of us that planned it after P had done his – I was much more willing to say well no maybe we should do it like this because this didn't work very well without feeling like I was – being rude. (Geog, E)

Gradually, she felt much more comfortable as a member of the pedagogic team. Such progression from hesitation to higher levels of confidence was typical of the development described by the majority of interviewees. Detailed analysis of planning meeting transcripts (to be reported later in other papers) confirms the accuracy of this perception in most cases. However, one respondent felt that the integration through lesson study placement was very effective and prompt, with her suggesting that she felt part of a pedagogic team from early in the practice:

Yeah, it definitely changed just from within the first week, so I felt like I could ask them questions and that we were all working together to create good lessons rather than this 'independentness' where that's your lesson, you get on with it kind of thing. So I don't know if it's more of a reassurance on my part or whether it's was the fact that it actually did make me a lot more confident... because I could go into a lesson knowing that someone with M's experience thought that that was a good idea, so I knew that it would be ok and that it would kind of work. (Geog, H)

Teaching a lesson that they had evaluated and re-planned following the mentor's teaching was seen as valuable by all participants:

I felt more comfortable teaching a lesson that I'd already seen because we'd made improvements, it was quite a daunting experience thinking, "She's already taught it first, then I'm teaching it". But because we'd worked on it quite a lot as well, discussing ideas and things like that I felt a bit more comfortable rather than going in with something completely new. (H, ML)

I really enjoyed watching at first to see how it's done, and it was so much easier seeing it and then... (Geog, C in focus group)

Others also welcomed the collaborative shared responsibility that is the hallmark of engagement in lesson study:

I know it sounds silly, but it takes away the level of responsibility from one person, because if it goes disastrously you can both look at each other and go well, oh well, you know, we know what to do next time, but you don't sort of feel like a failure in that sense because it's not just on you (N, ML).

This shared perspective arising from engagement in a collaborative enterprise was not characteristic of their other teaching placement, which did not include lesson study, as will be discussed further below. Collaborative planning was the principal benefit identified by the respondents, a feature largely absent from their other teaching practices which did not feature lesson study:

.... at my first placement I didn't do any like collaborative planning or anything (Geog, R in focus group)

The fact that time was set aside (it was always set aside like time for it) and was in a sense protected was seen as particularly helpful and effective to the development of the trainee teachers:

Well I'd probably just say allocating planning time having an experienced person was the thing that helped me most. So you had an hour where you would just sit down talk to him about a few lessons, a few things that you could do rather than five minutes here, five minutes there, things like that (Geog, A, focus group).

The extent to which lesson study integrated trainees into their placement departments was not clear but there was clear evidence from all twelve interviewees of engagement with mentors in the discussion and evaluation of collaboratively planned teaching, of working together in the design, teaching and evaluation of research lessons.

The quality of the mentor was seen as the key to the effectiveness of the collaboration. All participants recognised the excellent engagement they had experienced, including the opportunity to see them teach the first research lesson, which 11 of the twelve saw as an example of modelling, despite their being focused on the observation of a small number of learners. The frequently expressed perspective about the engagement and support of the mentor echoes findings from previous studies (for example, Gurl 2011; Marble 2006). Mentor engagement, as willing and self-critical collaborators, was considered essential to the success of lesson study. As a result, one student-teacher in the group interviews expressed the view that it could not be mandated as part of the programme:

.... If I imagine my last co-tutor I don't think she would have wanted to do it and if she had had to do it she wouldn't have done it properly (V, ML).

The issue of time arose in a number of responses and this was a constraint as only two schools managed two cycles of two lessons. While lesson study was deemed valuable, time management was a challenge:

But the workload, because it's quite big, but at the end of it I learnt a lot from it so I felt it really worthwhile and beneficial. So... it's just the time consuming element, in the placement (I, ML)

Time had to be planned carefully so that lesson study was integrated into the time allocations made over for the role of mentoring in our programme rather than becoming an 'add-on' to core activity. Mentors as willing collaborators and models in lesson study projects were acknowledged as keys to the entry of the student-teachers into successful pedagogic practices.

Learning about students

This was a major point of discussion, captured in themes 3 and 4. In particular, the opportunity to observe the lesson through the experiences of two or three learners proved to be a revealing experience, although not easy or straightforward as we discuss below. Most of the trainees felt that their thinking about learners and their learner awareness (about their approaches to learning, their levels of engagement and even levels of ability) changed significantly:

Because I almost felt like I was one of them because I was sitting in the class and I wasn't focussing on the teacher and it does make you think like it's a lesson and you're meant to be learning something from it but...when you can see other people messing around you are drawn to it. You can see exactly what's going through their minds. If someone is disruptive you see why everyone suddenly hasn't got their eyes on the teacher.

Another expressed (in rather vague terms) impact on her pedagogy resulting from the observation of an individual student:

Well, that was interesting because we didn't actually change that much after watching him, we changed one thing, but just watching him, it meant that when I was explaining it I sort of knew things that I wouldn't have mentioned before. (Geog, A)

The view from the front of the class was considered different:

In a classroom of 30 kids there is no way that a teacher is able to consistently track the engagement and attainment of every pupil in that lesson. (N, ML)

.... it's interesting because you don't notice it as a teacher – but if you're just looking at three students and they don't realise you're watching them it's brilliant – yeah I thought it was good. (Geog, R)

Observations of individual students often resulted in revised judgements about their abilities and their expectations, with some references to students exceeding expectations, in one case confirmed when the trainee teacher interviewed one of the students that she had observed at work:

Yeah, it was strange at first, but then it was useful to actually see if they were working throughout and then I interviewed them to see if they actually, how they thought they worked. So one of the boys, he was quite fiddly, like playing with his pen, but then when it came to the plenary and they had to come up to the board, he was the one who was putting his hand up and going up and giving all the answers. (Geog, H)

Some observations led to changes in practice, for example with a view improving student participation in interactive activities in a modern language class:

.... with my year nine class, like with that lad who was sort of on his own, it really made me think sort of wait a minute, it's all about the learners and it made me really sort of adjust how I taught them in future and when I did do like a revised seating plan getting him more involved in things... (H, ML)

However, observation of learning was not all plain sailing. Two trainees were particularly challenged by what they should be observing and felt that they were somewhat at sea about what to note down, for example, the following person felt comfortable about observing teacher performance (teaching) but much less so when looking at learning:

He was spot on with how he taught it. In terms of observing the students, I think the point was, what exactly am I meant to be observing? (Geog, E)

The project had not adequately prepared them for this activity:

So I think if it's going to be done again with a student-teacher who's never done lesson study, they need to know what to look out for when they're observing. (Geog, E)

This is not unique to this study. Our study of the literature (280 papers) suggests that very little attention has been given to how learning should or can be observed in research lessons, an issue that we will explore in future studies (Wood and Cajkler, forthcoming).

Two other student-teachers, however, found the opportunity for observation of a small number of learners both absorbing and enlightening. A geography lesson study team had the lesson filmed to assist the review of the lesson, which was fortunate given the absorbed way the trainee engaged in the observation.

I was so engrossed in watching what the students were doing rather than thinking right now we should be moving onto this or – I honestly couldn't tell you what went on in the first lesson – I just had no idea and then I had to go back obviously like watch it to like write my own lesson plan for it. (Geog, R)

A modern linguist trainee felt that her Year 10 lesson study group was the one with which she was most confident and familiar by the end of the placement:

I think it helped me understand more the pupils in that class as well. By the time I left I felt I knew that class the most out of all my classes. (N, ML)

In general terms, despite the difficulties and uncertainties about what to observe, there was a view that observing learners had affected thinking about teaching:

It really made me think sort of wait a minute, it's all about the learners and it made me really sort of adjust how I taught them in future and when I did do like a revised seating plan getting him more involved in things... (H, ML)

The next section carries this theme forward with more detailed discussion of impact on pedagogy.

Impact on pedagogy

Themes 1 and 2 encouraged researchers to conclude that lesson study had contributed to the development of learner-responsive teaching and growth in what we term pedagogic literacy, to be explored in the discussion. The collaboration in planning-teaching-evaluating was seen as valuable by all participants, with positive impacts on their learning how to teach and on the learning experiences of their students:

When P taught it because I didn't know what I was, what exactly I was meant to be looking for, it was all a bit new and I was still a bit confused. By the time we were doing the second cycle and we were doing the debriefing and I'd seen how the lesson had improved from the first one, you could see the benefit of it, how the students were more engaged, the types of activity... .. how we sort of altered the activity slightly, it had such a greater impact on their learning and they all seemed to, almost like they could write the answers out for themselves more so than before. (Geog, E)

After the mentor lesson, the evaluation meeting was considered particularly valuable as it enabled the trainees to amend the observed lesson to suit his/her learners, having seen the lesson field-tested by the mentor. In one case, the inexperienced trainee claimed to enjoy greater success than her mentor:

.....we realised that we could improve the lesson by changing the order of activities, which was good because, when it came to my lesson, it was clear that the students learnt the topic much better than in my co-tutor's lesson. (I, ML)

Interviewees described quite detailed discussion of how lessons were amended to meet learner needs, following critical evaluation for example of an artefact produced for the first lesson:

I mean we changed one thing which was quite a major thing, which was the resource that I'd made was actually completely useless actually in the lesson. So like, we both looked at it and thought it was a really good resource and then because he did it practically we thought actually it didn't help him at all to what he did. And then when I did it, it was completely useful, so just from that point of view, the fact that it looked perfectly alright, he'd looked at it and thought yeah that's a good resource and what we've planned, I'd looked at it and thought yeah I'm pretty happy with that, but then when it came down to actually seeing it, it was just they, they used half of it and the other half that we'd made was completely pointless, it just didn't fit how it was going, but because it was him doing it he sort of, he dealt with it and like, it was like quickly over it, but if that was my lesson I'd have been like ah no, I need to make sure they do this side even though, it just wasn't relevant (Geog, A).

There was evidence that insights from lesson study had impacted more widely, for example on how student-teachers planned other lessons, for example:

On every lesson plan after that I then started putting an extension on the bottom so if I do things too quick I've got something that I can either start thinking about what we're going to cover next lesson or go over what we've done the last couple of lessons or even if it's just a class discussion or write down your opinion on x, y and z, there was always something there so I wasn't just stood there. (Geog, E)

A modern linguist expressed similar if less specific views:

So by doing the lesson study it made the learning of the pupils at the forefront of the planning. (A, ML)

The generally positive responses valued collaborative practice in particular and were typified by the following:

I think it is the fact – you plan a lesson so closely with an experienced teacher helps in a lot of ways to – well there's a lot of things I wouldn't have thought of when I planned a lesson on my own. (V, ML)

All interviewees expressed greater confidence about planning and about thinking about the learners rather than about the teaching events or resources that they might organise. Generally, they

believed that the emphasis in their thinking had moved primarily towards learners and their learning rather than being focused on what they did as teachers.

Discussion

Interviews with participants suggest that lesson study allowed for participative discussion about learning and teaching and opportunities for a collaborative approach, in a supportive community in which both mentors and student-teachers were learners focused on the improvement of pedagogy, not just the training of the prospective teacher. Mentors clearly led the process but all student-teachers felt involved, despite some initial discomfort and uncertainty, although three participants expressed reservations about the difficulty of observing learning and the challenge of offering feedback to far more experienced colleagues.

Student-teacher perspectives suggest that through lesson study, the student teacher and mentor collaborated in a consistent focused dialogue about pedagogy, leading to the development of greater pedagogic literacy in both cases. This, we believe, was the principal achievement of lesson study in these case studies, a collaborative opportunity to explore the complex system of classroom-oriented processes, leading to growth in participants' pedagogic literacy. Seeing teacher development in relation to an emergent holistic concept of 'pedagogic literacy' implies a comprehensive dynamic vision of how teaching quality develops. Pedagogic literacy is constituted of the wide repertoire of teaching-related knowledge, skills and attributes. Looking at teacher preparation from the perspective of pedagogic literacy and its growth potentially offers a counter-view to the prevailing culture in ITE which sees teaching as a set of discrete competences to be ticked off as trainees progress through their programmes. Pedagogic literacy includes teacher skills that are general in nature, for example understanding of learning and learners; context-related skills such as knowledge of the school and departmental cultures and its working practices, team work and collaboration, as well as the specific but interdependent professional skills such as lesson-planning, use of questions and understanding of various teaching approaches. The concept also includes teacher beliefs and values, philosophies of teaching, including attributes such as commitment to professional development, reflection on practice (Schön 1983) and respect for learners and colleagues. Growth in pedagogic literacy represents a continuum of teacher development composed of learning from a very long and wide range of experiences, including critical reflection on one's own learning experiences in instructed settings, through to the acquisition of theoretical understanding in teacher education programmes and reflective practical teaching skills from school placements early in one's career. The process continues throughout a teaching life leading to ever greater understanding of teaching as a social phenomenon, of the recursive uneven nature of learning and the wide diversity of learners. This is what is crucial to the preparation of teachers to meet the challenges a rapidly changing world and for the unexpected. For, this we need new teachers who have the tools to learn to teach (Hiebert et al. 2003), ready for the continually changing world and the unexpected demands that classrooms present. To help to promote such learner-responsive teaching, we are encouraged to believe that lesson study provides a vehicle for structured exploration of the pedagogy and all its complexities, appropriate for the initial development of pedagogic literacy and its continuing refinement towards a greater understanding of the processes involved. Our thinking is at an early speculative stage, but these are ideas that we will seek to refine as we analyse in more depth all of the data emerging from our lesson studies to date.

Student-teachers in this study suggested that engagement in lesson study in teaching placements was an effective way to help them grow their pedagogic literacy, not only their individual skills, knowledge and confidence but also their collaborative skills to enable them to participate actively and creatively in a community of teacher learners (working effectively alone and with others, but acknowledging the benefits of interdependence and collaboration). For ITE, lesson study appears to be at its most effective when experienced and critically engaged mentors support the growth of student-teachers. In turn, this requires the quality of pedagogic thinking and practice of mentors to be well developed, open to change and new ideas, that is to say, to a pursuit of ever-increasing levels of pedagogic literacy. The collaborative nature of lesson study opened up professional cultures for student-teachers: talking and creating together were very useful and were part of the engagement in the pedagogic community, leading to a productive interplay between collaboration and personal reflection in order for student-teachers to grow their understanding of pedagogy.

Some caveats emerged from the analysis of interviews. Perhaps the most significant challenge, not surprisingly, was that of time, as mentioned by some respondents. The typical pattern of a cycle was two research lessons but one school achieved two such cycles of two lessons and one did a cycle of three research lessons (the first and third taught by the mentor). In most settings, trainees thought than more than one cycle of two lessons was unrealistic. In addition, there was apprehension about the observation of learning and how to identify learning, some trainees emphasising both the lack of experience to do this and the limited preparation that we offered. Thirdly, there was nervousness when offering feedback about the learning that took place in the mentor's lesson, two trainees finding this quite challenging. Finally, while 16 cases began only 12 were concluded for a variety of reasons (time, mentor unavailability, timetabling issues and other organisational pressures). So, lesson study is not a universal readily applicable solution for all initial teacher education. If it is to be applied, its implementation will need to be carefully planned and resourced. It will not take root otherwise.

Conclusions

We concluded from the project that:

- 1.Observation was a challenge
- 2.Collaborative planning was particularly valued
- 3.There was evidence of feeling part of the pedagogic community of practice, but this was not overwhelmingly explicit in the interviews, but could be inferred
- 4.There were claims for growth of what we will term 'pedagogic literacy'.

Such claims, however, will need to be assessed against other data from the project, notably discourse analysis of planning and evaluation meeting transcripts.

At this stage in our analysis, the confidence expressed by student-teachers about the contribution of lesson study suggests that the model has the flexibility and rigour to support the growth of student-teacher pedagogic literacy. However, until a full holistic analysis of all data has been completed, conclusions must remain to some extent speculative. Student responses suggest that the potential for growth is maximised through structured opportunities for them to plan-observe-evaluate-teach and discuss pedagogic processes in collaboration with their mentors over an extended period, in a

collaborative enterprise (Wenger, 2000). Other models of collaboration in ITE often involve mentors acting as advisors and guides rather than as co-collaborators mutually engaged in the design and teaching of research lessons. This allows for a more distant form of collaboration than was the case in these placements. Lesson study offered a collaborative alternative to the traditional approach of teaching placements, in which the student-teacher plans and teaches lessons as an individual, with periodic support from the mentor.

In lesson study, the student-teachers claimed to be more integrated into a pedagogic team than was their experience of a teaching placement without lesson study. Their responses suggest that the model is integrative in a variety of ways, offering:

- an agenda for mentor-student-teacher discourse
- focal research lessons for the study of learners and the study of teaching
- opportunities for the growth of pedagogic literacy
- possible foci and data collection opportunities for assignments
- opportunities for professional development of mentors.

Evaluation of lesson study from a Community of Practice perspective revealed clear benefits with student-teachers more fully engaged in collaborative practice than has been our experience with the traditional model. Thus, lesson study provided support for student-teachers to learn how to learn to teach (Hiebert et al. 2003, 202) through collaboration with committed mentors. However, use of lesson study in ITE is in its infancy and further studies are needed to assess its impact and evaluate the extent to which models like ours can provide an effective and feasible vehicle for student-teacher development.

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References

Ben-Peretz, M. (2001) The Impossible Role of Teacher Educators in a Changing World, *Journal of Teacher Education* 52(1), 48-56.

Carrier S. J. (2011) Implementing and Integrating Effective Teaching Strategies Including Features of lesson study in an Elementary Science Methods Course. *The Teacher Educator* 46(2), 145-160.

Chassels, C. and Melville W. (2009) Collaborative, Reflective, and Iterative Japanese lesson study in an Initial Teacher Education Program: Benefits and Challenges. *Canadian Journal of Education* 32(4), 734-763.

DfE (2012) Teachers' Standards. London: Department for Education.

Dudley, P. (2011) lesson study: a handbook. Accessed 20 January 2012 http://lessonstudy.co.uk/wp-content/uploads/2012/03/Lesson_Study_Handbook_-_011011-1.pdf

Farrell, T.S.C. (2006) The first year of language teaching: imposing order. *System* 34(2), 211-221.

Fernandez, M. L. (2005) Learning through Microteaching lesson study in Teacher Preparation. *Action in Teacher Education* 26(4), 37-47.

Fernandez, M. L. (2010) Investigating How and What Prospective Teachers Learn through Microteaching lesson study. *Teaching and Teacher Education* 26(2), 351-362.

Gurl, T. (2011) A model for incorporating lesson study into the student teaching placement: what worked and what did not? *Educational Studies* 37(5), 523-528.

Hardman, M.L. (2009) Redesigning the preparation of all teachers within the framework of an integrated program model. *Teaching and Teacher Education* 25(4), 583-587.

Hiebert, J., Morris A. and Glass, B. (2003) Learning to Learn to Teach: An "Experiment" Model for Teaching and Teacher Preparation in Mathematics. *Journal of Mathematics Teacher Education* 6(2): 201-222.

McMahon, M. T. and Hines, E. (2008) lesson study with Preservice Teachers. *Mathematics Teacher* 102(3), 186-191.

Marble, S. T. (2006) Learning to Teach through lesson study. *Action in Teacher Education* 28(3), 86-96.

Marble, S. T. (2007) Inquiring into Teaching: lesson study in Elementary Science Methods. *Journal of Science Teacher Education* 18(6), 935-953.

Myers, J. (2012) Lesson study as a Means for Facilitating Preservice Teacher Reflectivity. *International Journal for the Scholarship of Teaching and Learning* 6(1), 1-21. Accessed 12 December 2012 from <http://www.georgiasouthern.edu/ijstl>.

Parks, A.N. (2008) Messy learning: Preservice teachers' lesson-study conversations about mathematics and students. *Teaching and Teacher Education* 24: 1200-1216.

Parks, A.N. (2009) Collaborating about what? An instructor's look at preservice lesson study. *Teacher Education Quarterly* 36(4), 81-97.

Powney, J. and Watts, M. (1987) *Interviewing in Educational Research*. London: Routledge and Kegan Paul.

Ricks, T. E. (2011) Process Reflection during Japanese lesson study Experiences by Prospective Secondary Mathematics Teachers. *Journal of Mathematics Teacher Education* 14(4), 251-267.

Rock, T. C. (2003) A lesson study Model for Preservice Teacher Education. *Journal of Research in Education* 13(1), 31-38.

Schön, D.A. (1983) *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books .

Sims, L. and Walsh, D. (2009) Lesson study with Preservice Teachers: Lessons from Lessons. *Teaching and Teacher Education* 25(5), 724-733.

Tsui, A.B.M. and Law, D.Y.K. (2007) Learning as boundary crossing in school-university partnership. *Teaching and Teacher Education* 23(8), 1289-1301.

Wenger, E. (1998) *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.

Wenger, E. (2000) Communities of Practice and Social Learning Systems. *Organization* 7(2), 225-246.