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Mentors and student-teachers "lesson studying" in initial teacher education

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Abstract

Purpose – The purpose of this paper is to study an adapted version of lesson used with mentors and student-teachers in a one-year initial teacher education (ITE) programme for prospective teachers of geography and modern languages. In partnership with eight secondary schools, the effectiveness of the lesson study cycle was evaluated as a vehicle for exploration of approaches to aid student-teacher learning during school placements.

Design/methodology/approach – In total, 12 lesson study case studies were completed and analysed.

Findings – Three principal findings emerged: first, most collaborating mentors and student-teachers reported that they engaged in a reflexive process, exploring the complexity of teaching, each learning more about the characteristics of teaching; second, in cases where collaboration allowed student-teachers a degree of autonomy, lesson study provided a collaborative scaffold for understanding the complexity of teaching, contributing to professional development along a continuum which the authors tentatively term "pedagogic literacy"; third and less positively, some mentors struggled to shed the shackles of traditional roles, dominating the discourse as advice-givers so that a traditional "parallel" approach to mentoring continued.

Originality/value – The work expands the experiential base of lesson study efforts in ITE in the UK and elaborates a view of teacher learning that challenges reductive approaches to the preparation of new teachers. For the first time, it presents student-teacher and mentor perspectives on the use of lesson study in teaching practice in England.

Keywords Lesson study, England, Initial teacher education, Mentor and student-teacher perspectives

Paper type Research paper

Introduction

In 2012-2013, to support student-teachers to develop contextualised understanding and skills that facilitate transition into full-time teaching, a variation of lesson study was used in a one-year Post-graduate Certificate of Education (PGCE) programme for prospective secondary teachers of geography and modern languages in England. Use of lesson study in initial teacher education (ITE) is relatively infrequent and subject to many constraints (noted by other researchers, e.g. Parks, 2008), notably two particular challenges: first, the difficulty of integrating it into already very crowded ITE programmes; and second, engaging mentors in the process. A dyadic version of lesson study, designed for mentor and student-teacher pairs, was implemented by nine student-teachers during teaching practice placements in partnership schools. Three other student-teachers worked in a triad, as a result of the co-option by the mentor of another collaborating teacher. We recognise that triads would have been preferable but we were limited by what schools could offer over the duration of a teaching practice placement and by the need to meet statutory expectations that govern teacher education programmes. For example, schools are required to provide a timetable of

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comprehensive teaching opportunities for each student-teacher. Placing them in pairs is thus possible in only a small number of schools.

Theoretical framework

There have been relatively few evaluations of lesson study in ITE, but those conducted suggest that adaptations of lesson study can contribute significantly to student-teacher development (Chassels and Melville, 2009; Sims and Walsh, 2009; Myers, 2012). Several variations on lesson study have been used with prospective teachers, for example "lesson plan study" (Cavey and Berenson, 2005), which focuses on the development of student-teacher subject knowledge and lesson planning, but does not include teaching of the lesson. A more complex approach known as "Microteaching Lesson Study" involves student-teachers planning, peer-teaching and evaluating research lessons, but not teaching them in schools (Fernandez, 2005, 2006, 2010).

Three influences on the development of the project reported here rest on the notion of seeing teacher work as a holistic endeavour which moves beyond the confines of a set of externally determined standards and focuses more strongly on exploring pupils' learning and responding to learning challenges, drawing on the following:

(1) a belief that lesson study is an effective vehicle for teacher development (Stigler and Hiebert, 1999) and provides opportunities for student-teachers to learn how to learn to teach (Hiebert *et al.*, 2003), in collaboration within a community of practice (Wenger, 1998);

(2) Biesta's (2012, 2014) view of teacher agency and the notion of "wise educational judgment" resulting from both reflection and experience in the classroom; and

(3) Illeris' (2007) multi-layered view of learning, composed of three dimensions: cognitive, emotional and social.

Learning to teach is not just a matter of acquiring technical skills, but crucially "requires teachers to understand the links between particular teaching activities, the ways different groups of students respond, and what their students actually learn" (Timperley, 2008, p. 8). This holistic view of teaching led us to be influenced by two theoretical insights:

(1) acculturation of individuals to become members of pedagogic communities of practice (Wenger, 1998, 2000); and

(2) development of "professional capital" through collaborative engagement with authentic pedagogic problems (Hargreaves and Fullan, 2012), supported by knowledgeable others.

Hargreaves and Fullan (2012) argue that educational change and improvement needs to focus on the work of teachers, based on collaboration and capacity building amongst the teacher body. Their concept of professional capital is based on the philosophy that:

> We must invest in developing teachers' capabilities and give them time to sharpen these capabilities to a high standard (Hargreaves and Fullan, 2012, p. 45).

Professional capital is comprised of three elements:

(1) human capital: development of individual expertise;

(2) social capital: expertise from working collaboratively; and

(3) decisional capital: expertise to make decisions for improvements in practice.

We began from the perspective that decisional capital can be developed by collaboration in a pedagogic community of practice and that it is closely related to the ability to make wise educational judgements (Biesta, 2012), informed by understanding of how learners respond in the classroom. This is at the core of developing pedagogic communities of practice. As a result, we need to find methodological vehicles in ITE which encourage activities that enhance professional capital. Thus, we wanted to evaluate how lesson study would afford opportunities for the development of professional capital and judgement by student-teachers.

However, the difficulty of using lesson study in ITE is considerable. This project is one of just a small number that involve mentors in a leading role in lesson study. Few projects have used full cycles of lesson study that rely on collaboration between student-teachers and their mentors (e.g. Cajkler *et al.*, 2013, Tsui and Law, 2007).

Mentor and student-teacher collaboration involves an asymmetry, in terms of status, power and experience (Cajkler and Wood, 2016) that could be seen as at odds with the collaborating groups envisaged by advocates of lesson study. Elliott (2012, p. 108) describes student-teacher experience in ITE as a "process of induction, in which the novice observes the mentor and then strives to imitate their performance assisted by critical feedback from the latter". The typical experience involves planning lessons alone following a linear objectives-led formula (John, 2006), and then having the plans commented upon by the expert mentor. Thus, the mentor-student-teacher relationship has been characterised by observation and directive feedback, a process which often means student-teachers working in parallel to more experienced colleagues, but not in deep collaboration with them.

The project

In England, one-year post-graduate ITE courses are typically school based and increasingly school-led. However, the PGCE course for this study was university-led. Student-teachers had two teaching practice placements covering a total of 24 weeks, split between two contrasting schools: the first placement of ten weeks was in the winter term (2012), while the second lasted 14 weeks from March to early June (2013). In the project reported here, eight schools volunteered, hosting student-teachers as presented in Table I.

The student-teachers only used lesson study in one placement, seven in the first placement, and the other five in the second. In total, there were nine mentors, but three of them participated in both Phases A and B. We did not explore the relative value of lesson study to student-teachers in each placement, but recognise that this could and should be the focus of future study.

Table I. Distribution of lesson study cases in eight partner schools

	Geography		Modern languages	
	Phase A	Phase B	Phase A	Phase B
School A	1	1	0	0
School B	1	1	0	1
School C	0	0	1	0
School D	0	0	1	0
School E	0	0	1	0
School F	0	0	1	1
School G	0	1	0	0
School H	1	0	0	0

Researchers led a half-day training session with school-based tutors and student-teachers before the first practicum, using Dudley (2011) and Lewis (2002) for guidance on the principles and practice of lesson study, with participants advised (but not mandated) to follow the following stages of Dudley's (2011) model:

(1) review by mentor and student-teacher of learning challenges faced by students in one class;

(2) identification of a specific challenge with an aspect of learning;

(3) agreement on a timetable of research lessons in the practicum;

(4) planning of a "research lesson";

(5) first teaching of the research lesson by the mentor; with the student-teacher (and, possibly other teacher) observing the learning of three case students (as advised by Dudley, 2011);

(6) collaborative evaluation and amendment of the lesson, focusing on evidence about the three case students' learning;

(7) re-teaching of the lesson to another group by the student-teacher, with observation of student learning by the mentor; and

(8) collaborative evaluation of the lesson.

Interviews with case students were discussed with mentors and student-teachers but left to the discretion of schools. However, there was discussion of learning and what to observe. Student-teachers were advised to draw on concepts of learning discussed in the university professional course, suggesting that they seek to note down what kinds of learning they could observe in the case students, using Illeris' (2007) three dimensions of learning: cognitive, social and emotional. Thus, we hoped they would be able to record evidence of success in developing knowledge and skills (cognitive), co-operation and teamwork, e.g. to solve a problem (social) and then attitudinal responses (emotional responses such as interest, engagement and enthusiasm). Case students were limited to three as in most projects there was only one observer; choice of case students depended on the learning challenge identified but typically would involve observation of three learners at different levels of ability or learners who were perceived to be less motivated. Usually, participants managed to complete a lesson study cycle of two lessons, but two student-teachers managed to complete a double cycle (four research lessons in total) and another realised a cycle of three research lessons.

Research methods

Our research question was:

RQ1. What did mentors and student-teachers learn from their use of lesson study during teaching practice placements?

To this end, we conducted a qualitative-interpretive study of student-teacher and mentor learning, drawing on detailed analysis of:

- collaborative planning and evaluation meetings;
- semi-structured individual interviews; and
- focus group meetings with participants.

Transcriptions were completed for each planning and evaluation meeting and subjected to stanza analysis (Gee, 2011), to chunk the meetings into thematic episodes and prepare the ground for detailed discourse analysis. Post-lesson study interviews with 12 student-teachers and 8 mentors (one mentor declined) were conducted in January and June 2013, and transcribed. The mentor interview schedule can be found at the Appendix; the student-teacher version mirrored this approach.

At the end of the programme, focus group meetings were held to elicit accounts of professional learning from engagement in the process by four mentors and all 12 student-teachers. Transcripts of these meetings were analysed for perspectives about the impact of lesson study on mentor and student-teacher engagement in collaborative learning. Figure 1 offers an overview of the wealth of data generated by the project.

This paper draws on detailed analysis of the individual interviews conducted at the end of each project. Initially, the individual interview data were examined independently by the two researchers. Comparative content analysis (Powney and Watts, 1987, pp. 165-167) of student-teacher and mentor interview responses led to the identification of ten broad themes (see Table II with a breakdown of thematic units), agreed by both researchers. Content of planning and evaluation meeting transcripts was then compared with the content of interview transcripts to confirm or modify our understanding of claims made in interviews.

Following the above analyses, we re-analysed and refined our coding of themes 1-4 (teaching approaches; teacher learning; impact on practice; student-focused observation), to focus on teacher learning, reported by both mentors and student-teachers during lesson study cycles.

In an effort to synthesise our understanding of the differential learning of student-teachers and mentors, we concentrated analysis on a comparison of what mentors and student-teachers said about their learning (theme 2) with particular reference to

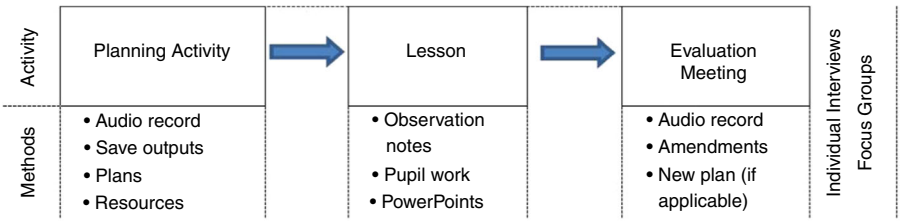

Figure 1.
Data collected in lesson study cycles

	Thematic units	% student-teachers	% mentors
1	Teaching approaches (pedagogy)	22	9.5
2	Teacher learning (direct talk of new learning by participants)	10	8
3	Impact on practice (changes proposed or implemented)	12	21
4	Student-focused observation (learning from observation)	12	10.5
5	Student participation and progress in lessons	16	11
6	Collaboration in planning and working together	12	13
7	Amendment to research lesson during evaluation	4	4
8	Potential of lesson study incl. constraints	7	16
9	Summative teacher evaluation	2	2
10	Summative observer evaluation	3	5

Table II.
Themes from analysis of post-lesson study interviews

themes 1, 3 and 4 (pedagogy, impact on practice and observation of students' learning). The re-analysis of themes 1-4 led to identification of participants' learning, under three sub-themes:

(1) learning from the lesson study process;

(2) learning from the observation of students; and

(3) impact of lesson study on teacher practice.

Participant perspectives are discussed below, focusing respectively on mentor and student-teacher perspectives about their learning.

Teacher learning from the lesson study process

Analysis of the data revealed a complex picture of initial uncertainty, followed by a gradually developing sense, among most participants, that lesson study could work in teaching practice placements. Despite early concerns, a number of developmental benefits were perceived, in particular in relation to collaborative planning and willingness to take independent responsibility for teaching classes. Seven mentors believed that the project had provided more effective opportunities to understand teaching, two calling their experience of lesson study "eye-opening". However, three mentors struggled to understand the actual process, so there were false starts, as admitted by one who supported student-teachers in both first and second placements:

> I suddenly realised at the beginning of it all that I'd been doing it wrong the year before because when we did it with BBBB […]. we focused on observation of the lesson (M1).

All mentors reported that it was helpful, but perspectives expressed in interviews need to be viewed against the conversations that took place in planning and evaluation meetings. For example, three mentors stressed the tensions involved in observing the learning of students in class, rather than the performance of the student-teacher. For one of the three, however, the process seemed to have no effect on his approach to providing feedback. He continued to use a formal, teacher-focused format as the following extract from an evaluation meeting demonstrates:

> So, YYYY, how do you feel the lesson went? What evidence for learning was there in the lesson? (M5).

Unusually, there was little evidence in this meeting of "we-inclusive" collaborative dialogue and the trend appeared to have dominated planning, as confirmed in his post-lesson study interview:

> YYYY initially came to me with some outline ideas of what he'd like to include in the lesson, and then we met for a couple of hours, and we just went through each part of the lesson, and I sort of interrogated him on each part of the lesson to make him think about the learning purpose on each part of the lesson (M5).

The mentor's interrogative approach remained at odds with expectations associated with lesson study as a joint pedagogic enterprise, reflecting the kind of parallel approach to mentoring described by Elliott (2012).

Analysis of other meeting transcripts revealed that collaboration varied at all stages in the project, with some mentors more directive than others during the planning phase, but less so as the cycle developed. Four described how they were

very directive at the outset gradually diminishing their leading role, a pattern of behaviour confirmed when we studied preparation meeting transcripts. In one case, this meant that the focus for the lesson study was given to the student-teacher so that it conformed to a departmental project aiming for more effective language teaching:

> Yes. The first cycle, I'd already kind of decided it before. So, it was my decision really and DDDD didn't have that much choice, but I talked to her about it and asked if she was happy with that […] (M2).

Over the course of the teaching placements, mentors adjusted to the process in seven cases, but there remained two exceptions, suggesting that lesson study is not easily transposable into highly "performative" and hierarchical ITE cultures.

Conversely, student-teachers expressed fewer challenges in implementing the lesson study process. Guided by mentors, perhaps they felt less responsibility for the actual process and most certainly saw their mentors as models of good practice. So, they welcomed seeing the first research lesson taught by the mentor:

> I think I was quite nervous […] but […] J is like, she's so good, she knows, she's got really good lesson structures and lesson plans (T5).

Another noticed the way in which her mentor slipped into a support and advice role during the process, grateful for the experienced guiding hand:

> I noticed that I'd come up with some ideas and my co-tutor would say "perhaps it would be better to do this or that". So, working with someone like a teacher with experience was good because I also gained some new ideas (T7).

However, spoon-feeding was also acknowledged as a danger as expressed by this geography student-teacher who worked in a triad:

> […] when I had to teach the French Revolution I had to go to TTTT. He's set in his ways and VVVV [mentor] is set in his ways, and at the beginning it was, kind of, you do it VVVV's way or no way. So, everything that I suggested, he was like, no, no, we should do it like this. But, then, after a while, he did start to develop and we did more group work and more active work that I'd suggested, but it takes a while for it to change (T12).

This kind of experience caused some student-teachers, in one focus group meeting, to reflect on the feasibility of introducing lesson study to a whole ITE programme, questioning how it would work across more schools. One (T6) was adamant that one of her mentors would not undertake the role in an appropriately committed way. Despite such reservations, however, ten student-teachers preferred teaching placements with lesson study, identifying as significant the shift of focus to the learner:

> I suppose when it was just me being observed, it was all about what I was doing and how I could have done things better or different, whereas after the lesson study it was focussing on what the pupils were doing at each point in the lesson (T9).

Others reported positive impact on their planning:

> Obviously the amount of depth I thought about my lesson planning definitely increased because I'm thinking about why I was doing each activity instead of thinking that's a good idea, but not having a reason why it's a good idea (T1).

Despite reporting that the approach was beneficial, there was a frequently expressed preoccupation in interviews about how they should observe learning, a significant

challenge for lesson study users in ITE. All except one student-teacher were aware of the difference in emphasis and believed it to be beneficial:

> I think it's completely different to a normal observation, but it's, I think, you also learn a lot from it as well. I think I learnt a lot from it, like just how my students work (T7).

Knowing more about students and their ways of working and mentor support were both seen as crucial to the developing of student-teachers' pedagogic capital, explored in detail in the next two sections.

Learning from observing students in class

Mentor accounts made frequent reference to the fact they had rarely had the opportunity to observe small numbers of learners in the classroom:

> It was difficult because I've never done anything like that before. I've never ever, just sort of cornered myself off and just focused on the pupils (M3).

This led two of them to speculate about the effectiveness of assessment for learning procedures, which may only give a superficial view of learning:

> That's interesting because you don't ever have an opportunity just to observe learners; it made me realise that you need to be checking more than we perhaps do (M4).

It also raises questions about the value of mentor observation and feedback in the traditional system if it does not include focus on learners' reactions in the classrooms. Despite such uncertainty, mentors reported that observing learners had been revealing, opening up what we subsequently called the pedagogic black box (Cajkler and Wood, 2015). A modern languages mentor claimed that her perspectives on students were altered as a result of feedback from her student-teacher:

> I've got more of a perspective of learner behaviour, and what motivates kids and learning styles and all of that. That came out of it [observing case students] more than "was the lesson planned properly?" (M2).

She recognised that the process had changed her perspective, after "seeing" things that are difficult to notice when a teacher is at the front:

> You don't know what they're talking about […] what they're writing (M2).

Direct observation of students' reactions was described as revealing, especially when student-teachers were asked to observe and report back to their mentors:

> I learnt how distracted these particular students were in the lesson. Erm, my co-tutor was unaware sometimes when she was talking or explaining something, they'd just be tapping their pen or staring out the window. These students were really, really distracted (T7).

When it came to a geography student-teacher's research lesson, she found that feedback highlighted the limitation of her own ability to read the classroom when teaching from the front:

> I noticed when we did it a second time […] I think I kept asking the same sort of pupil to answer the questions and I was told there was a couple of students who put their hand up, and after putting their hand up two to three times, they just gave up for the rest of the lesson: "I'm not going to be picked" (T1).

This proved to be an eye-opener for her as she prepared her questioning strategy for future lessons. This belief that lesson study led to student-teacher learning, however,

was not uniform, the intonation and hesitancy of one student-teacher's response suggesting uncertainty about what she had learned:

> I think I understood certain elements more thoroughly and why you were getting the kids to do it, I think (T8).

Hesitation in responses was often linked to uncertainty about how to observe learning, as noted above. Other student-teachers shared similar views about the difficulty of interpreting students' behaviours, but claimed that focused observation on case students (Dudley, 2011) was very valuable, especially when complemented by interviews:

> Sometimes, you think a student's not working, they're distracted but actually you speak to them, they're like, I really enjoyed that lesson. And, you know, I said: well, what did you understand? What did you learn? And, they can tell you everything (T2).

As a result, four mentors recommended the use of post-lesson interviews with case students who had been observed and organised opportunities for their student-teachers to conduct post-lesson interviews. Learning from interviewing students was a source of insight for those who incorporated this into the lesson study cycle:

> Just hearing what they like doing, and what they don't like doing because you might think you've planned a really interesting activity, but actually they find it really boring. They might have done it so many times, across so many subjects, because you think it's really innovative, but actually it isn't (T2).

Observations were not considered, on their own, reliable enough to identify students' learning. Consequently, we recommend that post-lesson interviews with students should form part of the lesson study cycle, provided all ethical considerations can be satisfied.

Impact of learning from observation of students

Insights gained from observing learners in research lessons were recounted in all but two interviews. In addition, mentors reported wider impact on their own teaching and their own understanding of learners:

> They knew one thing, but they couldn't expand, which showed me that certain skills we need to develop more in geography are interpretation and application (M6).

Another reported important changes in her perspectives:

> That's what I mean about me having gained a different perspective. I think it's just taught me that it's really easy to over-react from the front, especially when it's teacher-led, you put yourself in a position where you need to have their attention all the time, and the minute that they start to do [something different]; you take it personally. That's what we all do. Whereas if you put it more on them, then you can go around and it's just a bit more of a relaxed atmosphere and they're more likely to be on-board, I think (M2).

This mentor was not alone in having her thinking shifted. Another, who struggled to switch the focus of his observations from student-teacher performance to the learners, recorded that his approach to planning had changed as a result of engagement in lesson study. Following the project, in preparing for a high-stakes senior management observation of his teaching (a regular fact of life in English classrooms), he decided:

> […] to take a seat at the back of the class, and imagine I was one of the pupils who was going to be learning from my proposed lesson. I ran through each activity one by one, and tried to work out how a pupil might perceive and understand each task. For example, had I put in my

> planning whether or not pupils were expected to work in pairs or as individuals? The lesson study project gave me a great insight as to how pupils perceived and completed different activities, and the questions they posed when certain explanations were unclear. After having raised these questions (albeit to myself), as I ran through my lesson plan, it allowed me to start thinking about how I was going to explain and model each activity, so as to avoid any ambiguity or "miscomprehension" that might creep into the pupils' minds and distract their learning (M4).

The judgement, made by senior management observers, was much more positive than usual, an outcome that he ascribed to his being more learner-responsive than in the past.

In most schools, mentors reported greater impact than their student-teachers. Impact on their practice ranged from relatively little change (in one case, amounting to mere adherence to old practices) to resolutions about being more learner-responsive in future. Four mentors described "transformed" views about learners:

> There I was thinking that he's sort of wandered off task, that kind of thing. It transpired that he was actually taking notes. You know he wasn't doodling or anything like that. He was actually, he was learning in a different way to what um, I'd sort of accounted for really (M4).

This "non-participator fallacy" was reported in other interviews that focused on how teachers identify engagement and learning:

> We had a specific boy JJJJ, […] at first, you would think this guy's not involved in the lesson, yet, when it came to the crunch, he took everything in and his analysis and his feedback were far better. So, that taught us then to be careful of to say if a child's not writing things down, that does not mean that he's not learning (M6).

These revelations were not uncommon, indicating that lesson study was not just a vehicle for supporting the growth of student-teachers but also an opportunity for the development of the mentor's own pedagogic skills. Most mentors appeared to believe that collaboration with student-teachers in lesson study could offer a fruitful (often eye-opening) alternative to what we call parallel models of ITE, in which genuine collaboration may be relatively rare.

Student-teachers reported that observing learners in the classroom during the mentor-led lessons highlighted the need for planning and teaching to be learner-responsive:

> Well, it's certainly showed more about not to just focus on what I'm doing, definitely, because obviously one of the things was that I had to watch what the kids were doing […]. That definitely made me think (T11).

Understanding more about different ways of thinking was also reported in student-teacher accounts of their learning:

> […] the way that they thought about it was different to the way I thought. I could see that from their answers, and I thought I never thought of that. So, I knew I was only picking out the answers I wanted them to look for. I didn't think about all the other things (T1).

The process of observing and interviewing case students opened eyes to what students find beneficial, and how they react to what teachers present to them:

> […] talking to the students, that's like the biggest thing that I got out of that, actually understanding what they wanted (T2).

Others reported that the process led to more thinking about what would help the pupils to learn more, making them less self-centred as teachers:

> Like what they will get from doing certain activities, what they will learn through doing them, sort of thing. Rather than always focussing on me, focussing on how they will react (T9).

In the following case, this contrasted with her approach in the first placement in which she had experienced a traditional approach to teaching practice:

> I think it's given me a greater understanding of the learning of the pupils, and so […]. when I'm lesson planning I think about what the pupils will be achieving from each activity. Whereas before, I don't think I thought so much about that in phase A [first practicum] (T3).

This was echoed by others, for example:

> It opened my eyes as to exactly what they all find beneficial and how they react to the different things that you present to them (T4).

> […] you get aware of the different children in your group and […]. you have to teach in a way that they can understand and they can follow the lesson (T6).

There was growing awareness that learning to teach is more than imitation of models and that well-planned teaching does not necessarily lead to the expected learning (echoing Timperley's, 2008 review of teacher professional learning). There was evidence in interviews that student-teachers' approaches to evaluating were beginning to be less centred on their own activity and much more on their students. Getting to know the students more and seeing their perspectives heightened awareness, making student-teachers reflect while planning. Collaborative planning, observation and evaluation with a mentor contributed to planting seeds for the growth of student-teachers' ability to read what goes on in the classroom.

Discussion

What became apparent early in the project was that this version of lesson study could lay open for investigation the complexity of teaching and learning (the pedagogic black box, Cajkler and Wood, 2015), supporting prospective teachers to learn how to learn to teach (Hiebert *et al.*, 2003), while also supporting mentor development. Both student-teachers and mentors appeared to take from the process fresh understandings, from which we concluded that:

(1) most mentors and student-teachers engaged in a reflexive process exploring the complexity of teaching at different levels, each learning more about pedagogy in collaboration; and

(2) lesson study provided a collaborative scaffold for the understanding of this complexity, contributing to professional development along a continuum which we tentatively term "pedagogic literacy".

It must be acknowledged that for two mentors, it proved difficult to move beyond traditional approaches to supporting student-teachers. Nevertheless, in this project, there was evidence of a growth in the professional capital (Hargreaves and Fullan, 2012) of both mentors and student-teachers. Interviews with participants suggested that lesson study allowed for participative discussion about learning and teaching, in which both mentors and student-teachers focused on the improvement of pedagogy, not just the "performative" (Ball, 2003) training of a prospective teacher to meet a list of standards.

In our view, this enriched the teacher preparation process. As a result, we argue that an alternative conceptual framework for the understanding of what it means to become a "continually learning teacher" is needed, other than or at least as a complement to meeting standards. Student-teachers learn from other practitioners (social capital) in order to develop their practice, but also develop decision-making skills that enable them to teach in learner-responsive ways (what Fullan and Hargreaves call decisional capital). Within the collaborative context of lesson study, teacher knowledge, skills and competences are experimented with and extended, including the ability to make learner-responsive decisions during lessons, thus contributing to growth in "pedagogic literacy".

The concept of "pedagogic literacy" is born out of the view that reflective teacher skills continually evolve and teaching is much more than an activity that can be reduced solely to lists of standards. Teaching skills are not "fixed" or finite, but constantly respond to the diversity of classrooms, the needs of learners as well as the expectations of curriculum and assessment frameworks. Most importantly they include the ability to read the classroom (Ainley and Luntley, 2007), understanding learners' reactions to teaching and responding appropriately (cf. pedagogic content knowledge, Shulman, 1986), the ability to make real-time decisions in the classroom (Timperley, 2008) and adjust teaching accordingly by using decisional capital (Hargreaves and Fullan, 2012) and wise judgement (Biesta, 2012, 2014). The ability to read the classroom (Ainley and Luntley, 2007) and make appropriate learner-responsive decisions is the core component of pedagogic literacy. Pedagogic literacy entails observing, analysing and interpreting evidence of student learning, focusing on teaching in student-responsive patterns and basing professional in-class decision making on such evidenced patterns. This is an imperative at all stages of a teacher's career.

Growth of pedagogic literacy is a process of continual learning that informs and guides teachers' practice, including effective lesson planning and teaching approaches, as well as attributes such as engagement in reflection-on-practice (Schön, 1983). Learning to teach means more than matching performance against atomistic lists of teacher standards (e.g. Department for Education, 2012). While most participants in this project reported that lesson study had developed their collective professional capital, they took away different insights, developed within the collaborative process. Principal among the reported learning gains were that mentors improved their understanding and practice through observations of students' reactions to teaching, while student-teachers began to learn the skills they need in order to continually learn how to teach. They worked together, despite diverse levels of pedagogic literacy, to grow pedagogic capital (professional capital, in the words of Hargreaves and Fullan, 2012), becoming more learner-aware and responsive as a result.

Conclusions and recommendations

Lesson study is a structured exploration of pedagogy and its complexities, appropriate for use as part of the support for the initial development of pedagogic literacy and its refinement through collaborative practice in ITE. We do not propose abolition of standards or seek to impose lesson study in teaching practice, but argue that a more complex understanding of the continually emergent work of teachers is more effectively captured within a holistic view of teaching. Consequently, we suggest that the use of lists of standards needs to be moderated through the lens of "pedagogic literacy" so that ability to read learner reactions and make learner-responsive decisions feature much more centrally, as evidence of a prospective teacher's potential. However, the project also highlighted issues for development: the trainee-mentor relationship, the mentor selection process, the need for enhanced training in the purpose and process of lesson study all emerged as issues that required further study. In addition, student-teachers working in a triad reported more

positive outcomes. So, ways need to be found to make the use of collaborating pairs the exception rather than the norm. Finally, we would actively encourage the incorporation of interviews with case students so that student-teachers have the opportunity to complement observations of learning with case study perspectives about their learning.

In conclusion, this project confirmed our view that lesson study offers an effective collaborative approach to facilitate transition into teaching. Even in the confines of eight-week teaching placements, it equipped student-teachers with observation tools to understand learning and help develop their pedagogic literacy. Biesta (2014, p. 134) emphasises that:

> […] practical wisdom is not to be understood as a set of skills or dispositions or a set of competences, but rather denotes a certain quality or excellence of the person […] The ability to make wise educational judgments should therefore not be seen as some kind of "add on", that is, something that does not affect us as a person, but rather denotes what we might call a holistic quality, something that permeates and characterizes the whole person.

In lesson study, participants bring to the process different perspectives, different beliefs, and different levels of prior knowledge, experience and understanding, thus developing their pedagogic skills in different ways. In this sense, the pre-existing pedagogic literacy of participants in this project was grown and refined through collaborative engagement in the process. Further studies of mentor-led lesson study should be conducted in ITE to explore the extent to which it can offer a viable and pedagogically literate alternative to current reductionist approaches, such as the observe-imitate-be observed model of teacher preparation, so aptly described by Elliott (2012).

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Appendix. Interviews for Phase A LS Project (2012): Mentor version

A. What happened? The process

1. Can you tell us about the planning meetings you had with your trainee before your lesson?
2. Can you tell what happened during the teaching of your research lesson?
3. Can you tell what happened in the lesson debrief(s)/evaluation of your lesson?
4. What changes were made to the lesson before the trainee taught it?
5. What was your experience of seeing a lesson taught that you had trialled?
6. What happened in the evaluation of the trainee's lesson?

B. Problems/challenges

7. What problems have there been in conducting LS in the placement?
8. Is there anything you want to advise? Suggestions about use of LS/ideas?

C. Effects

9. What has LS given to you?

Can you tell me about the contribution of the cycle of lesson study to your work as co-tutor in Phase A?

What was important for you as a co-tutor in the process? What was most salient for you in the process?

Example prompt: Can you help me to understand the impact you think it has had on
a) thinking about teaching?
b) thinking about learning?
c) thinking about planning?
d) thinking about your mentoring role with trainees?

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