Chapter 9
Lesson Study in a Performative Culture

Julian Williams, Julie Ryan and Siân Morgan

Introduction

Lesson study originated in Japan as an inquiry-based approach to the professional development of teaching and teachers. It involves teachers' groups jointly planning and analysing special lessons in real classrooms, usually involving a focus on some innovation. Mathematics lessons in particular have often been studied, usually developing conceptual mathematics through the children's active problem-solving (Hart et al. 2011). Lesson study is widely recognised as powerful for mathematics education reform, and has been adopted—with adaptations—around the world. But every such adaptation in non-Japanese cultures inevitably involves a local effect. We ask, what can happen when lesson study is introduced in the particular English conditions where performance management and performativity are so dominant in schools and in professional learning? We report two case studies of our lesson study work with primary and secondary teachers in England.

International League Tables and Performativity

We live in an era of international comparison studies of children's educational achievement, where participating countries are placed in league tables in terms of their children's performance on written tests in key curriculum areas. Such results

J. Williams (✉)
School of Education, The University of Manchester, Manchester, UK
e-mail: julian.williams@manchester.ac.uk

J. Ryan
Faculty of Education, Manchester Metropolitan University,
Manchester, UK
e-mail: J.T.Ryan@mmu.ac.uk

S. Morgan
School of Education, The University of Manchester, Manchester, UK
e-mail: sian.morgan@manchester.ac.uk

O. McNamara et al. (eds.), *Workplace Learning in Teacher Education,*
Professional Learning and Development in Schools and Higher Education 10,
DOI 10.1007/978-94-007-7826-9_9, © Springer Science+Business Media Dordrecht 2014

have captured the imagination of politicians and social commentators and are generally focused in these terms: 'Are we doing better than before?', 'Have we improved our *position*?', and 'Why can't we be more like Singapore, Finland. . . ?'. Children here in the UK have thus been characterised as 'performing for Britain' or 'doing their sums for England'.

The International Association for the Evaluation of Educational Achievement (IEA) has conducted such comparative studies in mathematics and science since 1995, and subsequently every four years. Its Trends in International Mathematics and Science Study (TIMSS) measures fourth- and eighth-grade children's[1] achievement on written tests, and gathers background information about the contexts for learning from the children, their teachers, and their school principals, and information about the mathematics and science curricula in each country (IEA 2012).

The most recent TIMSS study (Sturman et al. 2008, pp. 1–2)[2] summarised England's 'grade 4 mathematics (year 5)' score in these terms:

> England's score, 541, was again very high, and significantly higher than in 2003. Only four countries outscored England: Hong Kong (607), Singapore (599), Chinese Taipei (576), and Japan (568).There is a larger gap between England and the highest scoring Pacific Rim countries in grade 4 mathematics than in grade 4 science. Four countries produced scores not significantly different from England's: Kazakhstan (539), the Russian Federation, Latvia and the Netherlands (535). Countries outperformed by England included the United States, Germany, Denmark, Italy, Sweden, Scotland, Australia and New Zealand. England improved on its level of performance in 2003: the 2007 score of 541 was 10 points higher than the 531 achieved in 2003. This was continued improvement as the 2003 score was much higher than in the earlier 1995 survey (484). As in science, England's performance in mathematics at year 5 is amongst the best in the world and continues to improve.

England's performance for 'grade 8 (Year 9)' was similarly described in terms of improvement from 2003 and noted better and similarly performing countries.

The Organisation for Economic Co-operation and Development (OECD) has conducted another international study, first in 2000 and subsequently every three years. Its Programme for International Student Assessment (PISA) measures 15-year-old students' scholastic performance in mathematics, science and reading. It too produces a league table of performance of participating countries.

The position of England in such league tables has been used by politicians to motivate and justify re-direction in educational policy. A recent exchange in the UK parliament in 2011 began with a question from Andy Burnham, Education Secretary in the former Labour Government but now in opposition:

> Can the Secretary of State tell the House on what research or evidence he has based his selection of subjects in the new English baccalaureate?

The Education Secretary for the current government, Michael Gove said in reply:

> The research and evidence that I undertook was to look at what the highest performing education jurisdictions do. When the OECD published its table on how our country had been doing in education over the past 10 years, I was struck to see that under Labour's stewardship we had slipped in the international league tables for English, for mathematics and for science.

[1] Year 5 (9- and 10-year olds) and Year 9 (3- and 14-year olds) in England.

[2] The TIMSS 2011 study was due to be published in December 2012.

Andy Burnham replied:

> ... let me quote from last year's PISA-programme for international student assessment-report, which says: "Most successful school systems grant greater autonomy to individual schools to design curricula and assessment policies".

The Secretary of State replied:

> I am surprised that the right hon. Gentleman has the brass neck to quote the PISA figures when they show that on his watch the standard of education which was offered to young people in this country declined relative to our international competitors. Literacy, down; numeracy, down; science, down: fail, fail, fail.' (Parliamentary report, 7 February 2011)

The political view here, that the UK is *competing* in an international education performance league, places great pressure on politicians and the teaching profession. 'Fail, fail, fail' is a summary political judgement passed down to those whose daily work is in classrooms—the teachers. England's 'performance' in such international league tables is also widely reported in the media, and political and public discourse refers to a 'driving up of standards' through external agencies. The teacher is exhorted to 'improve', and 'poor teaching' is to be 'rooted out'. This discourse comes to infect schools, staff rooms, and performance management: England is very good nowadays at getting rid of failing local authorities, failing schools, failing head teachers and teachers, and of course failing children. Arguably we are much better at this than most other countries in the league!

However, we, the authors, take a different view. There are more positive professional benefits to be gained from international studies and in particular consideration of cultural differences in pedagogical practice: for example, what can we, in the teaching profession, learn from other 'jurisdictions' and their practices? Some of those countries are also studying what they can learn from ours. There is also more to be gained from creating spaces to examine and share evolving local practice: How can we develop new cultural practices? Or, as Barrow (1984, p. 261) asked: How can we give teaching back to teachers? Give them ownership of their professional learning.

The English Culture of Performativity

We live in an era of performativity and performance management, where measures of performance are used as evidence in both policy formation and professional management. In a sense it was always so: throughout industry there was always a 'bottom line' calculation that equates essentially to money equivalence. In the public sector, however, this is relatively new. The spread of the 'New Public Management' has been charted by Strathern (2000) for the academy and by Power (1997) for the entire public sector. It originated in a combination of accountability, audit and discourse of best-value. Who can argue against holding management to account for tax payers' money, and who can argue against requiring evidence of delivery to specifications?

We theorise the education system as a production system of the commodity Marx called labour power, and the education of future labourers as enhancing this power, which has exchange value (it can be sold for money) and use value (it is useful

in production, and even in consumption). In the education system, the work of educating done by teachers is paid for by the State, and the value produced as certificates of a Boudieusian 'cultural capital', a cultural 'commodity' that will one day have economic value when the student enters the labour market (see Williams 2012). Thus, the audit and accountability economy in schooling is mediated by the State; but we refer to the knowledge learned by students as having an educational form of exchange value (the enhancement of their status or CV) as well as use value (to the extent they understand the knowledge well enough to make use of it).

However, evidence has accumulated of performativity's unintended consequences: research has uncovered some of its pernicious, presumably unintended, effects. Hospitals have adopted dangerous practices to 'deliver' required waiting time limits.[3] Police fail to record times of calls in order to reduce their 'response times',[4] and schools persuade students to make 'early exam entry' decisions that enhance a school's profile, even while damaging a student's future educational prospects (Advisory Committee on Mathematics Education 2011). Most of these practices involve responding to measures of performance rather than the quality of the performance itself. Teaching-to-the-test is quite successful short term in 'driving up standards', yet an accumulating body of research suggests that, while we have been working hard to drive up standards for many years, the outcomes for learners are not much better in terms of students' understanding or dispositions. In fact, teaching-to-the-test seems to be associated with a long-term decline in students' enjoyment of the subject and their choosing to study a subject in the future (see Pampaka et al. 2012a, b).

In particular, we suggest, performance management based on students' test grade outcomes (i.e. management that rewards teachers and head teachers in one way or another for the test performance of their learners) can be particularly pernicious if: (i) it applies to a combination of short-term gains, for example, to a period of teaching of less than several years; and (ii) it applies competitively to individual teachers or head teachers. Short-term measures undermine long-term work, while individual performance management measures undermine the professional culture (see Williams 2011). Finally, we have a problem with assessment of learning designed for formative purposes being used as summative evidence and vice versa (see Black and Wiliam 1998; Williams and Ryan 2000). Although it is possible to do both, they do pull in different directions:

> Summative assessment is usually motivated by the need to sum up what has been learnt over a period of time, by a need for accountability to the wider community or simply for the purposes of selection. Formative assessment is motivated by the need to identify children's strengths and weaknesses so as to inform the next steps in teaching. (Williams and Ryan 2000, p. 51)

[3] See for example, 'Independent inquiry into care provided by Mid Staffordshire NHS Foundation Trust January 2005—March 2009, Volume 1 & 2', chaired by Robert Francis QC, at http://www.midstaffsinquiry.com/pressrelease.html. Accessed 10 December 2012.

[4] BBC Panorama: 'Dial 999. . . and Wait?' BBC One, Monday, 3 September, 2012 http://www.bbc.co.uk/news/health-19455784. Accessed 10 December 2012.

In sum, we would argue that England's policy on schooling and school management has evolved all the worst features of the 'magic bullet' that kills the joy of learning and teaching.

What can we do? One approach is to argue that policy requires an accountability practice such that it can, in its turn, hold policy to account. The policy-makers and politicians, in their turn, then must also explain themselves to the public and the media when—apparently as a consequence of, and on account of their policies—things go wrong. What if it is shown that teaching-to-the-test is not working, as many teachers say they believe but feel obliged to practice?

One opportunity might be to develop measures that more faithfully reflect the significance of a broad range of educational objectives: measures of learners' dispositions such as confidence, or intention to further study (see Pampaka et al. 2012b), metacognitive awarenesses (Schraw 2002) or even 'performance assessment' (Bell et al. 1992). These might be particularly important to policy-making if the evidence shows that teaching for dispositions and metacognition has long-term gains over shorter-term teaching-to-the-test, such as the evidence collected by cognitive acceleration research (e.g. Adey and Shayer 1994).

We argue that the rhetoric of policy might be used sometimes to good effect. The reference to learning from the 'world's best systems'[5] might be a case in point, especially as reform movements grow in other relatively high performing education systems, such as Singapore and the Pacific Rim. Furthermore, in some systems the relationship between professional development and research is much better articulated than in England and the rest of the UK. In particular, Japanese lesson study has a growing worldwide reputation, with apparently successful variants in the Pacific and in English-speaking countries (Australia and the USA). We favour lesson study for many reasons, but not least because it places deep learning outcomes and lifelong professional development in the centre, and because it pursues this through a systematic partnership involving researchers with professionals developing practice.

Lesson Study

Lesson study is based on a long-established Japanese model of continuous improvement of teacher professional learning, and it has become popular in the US and Australia over the last decade. The Japanese approach studies the art of teaching, which is seen traditionally as practice that all teachers must learn, and continue to learn collectively, throughout their professional careers.

Interest in lesson study in mathematics education circles outside Japan grew out of the 1995 TIMSS Video Study and its contrast of mathematics instruction in Japan, Germany and the US (Stigler and Hiebert 1999), where comparisons in children's performance *and also* classroom practice were stark. Some ten years later, Stigler and Hiebert (2009) reported that many of the US readers of their earlier report had found the Japanese pattern of teaching both foreign and intriguing. Their readers had

[5] See statement of the current UK Education Secretary earlier in this chapter in relation to 'highest performing education jurisdictions'.

been particularly struck by the 'elegance with which Japanese teachers engage[d] their students in doing important mathematical work, work that focuses on core mathematical ideas and their applications' (ibid, p. 32). However, Stigler and Hiebert (2009) cautioned their readers to beware of concluding that Japan's teaching methods had 'anything at all to do with their high levels of achievement' (ibid, p. 33); they claimed, for example, motivation may be a more important factor.

Lesson study is based on the principle that change/improvement in teaching and learning in classrooms is best achieved by teachers themselves, empowered to make their own decisions through collaborative research-informed practice.

> Improving something as complex and culturally embedded as teaching requires the efforts of all the players, including students, parents, and politicians. But teachers must be the primary driving force behind change. They are the best positioned to understand the problems that students face and to generate possible solutions. (Stigler and Hiebert 1999, p. 135)

Lesson study is a dynamic research model whereby teachers work together to forge ongoing learning of both their subject matter knowledge and pedagogical content knowledge, and to share professional knowledge. It is a cyclical model of collaborative planning, observation, review, refinement and re-teaching of a research-lesson, and has many organisational possibilities. This collegial professional activity impacts on individual practice and, through participation and dissemination, informs the system as a whole.

> Through live research lessons, written reports, videos and sharing of experiences with colleagues, lesson study spreads thoughtfully-designed lessons on a wide-range of topics, creating a system that learns. (Lewis 2002, p. 11)

Teachers in the US have reported that their subject matter knowledge has been strengthened through lesson study, as they became aware of missing knowledge that was needed to inform their pedagogical practice.

> Lesson study alone does not ensure access to content knowledge. But teachers are likely to build their content knowledge as they study good lessons, anticipate student thinking, discuss student work with colleagues, and call on outside specialists. Lesson study can help educators notice gaps in their own understanding and provide a meaningful, motivating context to remedy them. (Lewis 2002, p. 31)

The key principle of the Japanese model is that teachers are the most pertinent and effective 'drivers' of their professional practice. This is in stark contrast to practice in England over the last decades, where change in classroom practice, and particularly in mathematics and literacy teaching, has been directed and monitored by central government through prescription, not only of content but also of style. Compliance has been ensured by external inspection of classroom practice and public reporting of schools' results in national league tables.

We argue that such external control leads to teacher alienation and dissatisfaction, and disempowerment leads to an impoverished professional practice. Transplanting professional practice from one culture to another of course is not the answer. Teaching practice is embedded in existing local culture and knowledge, but examining alternatives may open up new possibilities if the new perspective is adopted and adapted by the teachers themselves.

The practice of lesson study is generally evolving as it disseminates globally from Japan, and we now describe and analyse how lesson study can develop in a different culture, where teacher professional learning in England is dominated by graded lesson observations and league tables of children's performance on national tests.

Case Study 1: Primary School Project

Our current work with teachers in a small primary school in Manchester (authors Ryan and Williams) is part of a three-year project to develop dialogic pedagogy in mathematics. The teachers in the school already shared our interest in the productive use of children's mathematical errors and misconceptions to provoke classroom dialogue, and were enthusiastic about further developing mathematical talk and reasoning in all their classes, from reception to Year 6 (Ryan and Williams 2012).

We introduced all the staff (head, deputy head, eight teachers, seven teaching assistants) to Japanese lesson study, and described it as an ongoing, continuous improvement research model that used collaborative planning to design mathematical activity to give teachers insight into their children's mathematical development. We noticed that they were particularly engaged by the shift in focus from the teacher to the children, and there was palpable relief that we were not presenting yet another form of inspection for performance management.

As an introduction, we played a lesson study video of an actual 60-minute lesson from Japan on the 'Multiplication Algorithm'[6] for grade 3 children, led by Mr. Hideyuki Muramoto. This lesson had been designed by the Mathematics Group at Maruyama and it was being observed by a large number of Japanese and international visitors. The classroom, though large by England's standards, was thus very crowded. The lesson was presented by Mr. Muramoto and the visitors stood around the edges of the room; they would move around observing the children's work when the teacher had set them to work. We also gave our project teachers the detailed lesson plan (and the outline of the rest of the unit of 13 lessons) which had been drawn up by the Maruyama Group in their lesson study cycles.

The teachers found this lesson 'foreign but intriguing', just like Stigler and Hiebert's US teachers. They initially found the apparent 'chaos' and noise in the classroom surprising and almost shocking in contrast to expectations of Japanese practice and in comparison to accepted teacher-led (and dominant) practice in England. The large class size was also noted. The teachers remarked that as the lesson unfolded they began to see how artfully Mr. Muramoto had held back, had let the children talk and had skilfully orchestrated the development of ideas. The use of a large traditional blackboard to comprehensively track the lesson development was also seen as surprising. The electronic whiteboard is now a normal feature of classrooms in England, and blackboards have long since disappeared. Yet, in the Japanese classroom, the teacher was able to present and review the 'journey' of the children's work towards the lesson goal, with the trace of the lesson evident on the blackboard.

[6] 'Multiplication Algorithm' lesson video: http://hrd.apec.org/index.php/Multiplication_Algorithm_Grade_3_%28Japan%29. Accessed 10 December 2012.

The Japanese lesson plan and the more generalised nature of lesson goal-setting were also discussed in terms of cultural difference. For this particular unit, the overall goal and then particular lesson goals are stated quite differently to that in England:

> The goal of the Mathematics Group at Maruyama is to develop students' ability to use what they learned before to solve problems in the new learning situations by making connections. In addition, we want to provide 3rd grade students with experiences in mathematics that enable them to use what they learned before to solve problems in new learning situations by making connections. This lesson, "The Multiplication Algorithm (1)," is designed to utilize prior learning to make connections and solve problems in new learning situations. (Mathematics Group at Maruyama 2006, p. 1)

The Japanese teachers here appear to be focusing on developing the third grade children's metacognitive strategies through 'authentic' mathematical experiences—perhaps the model is to encourage children to act like mathematicians. The process of 'making connections' and the use of 'mathematical experiences' were considered too broad for a lesson objective in a classroom in England. The Maruyama Group also had a clear research focus for their lesson study: 'What kinds of lessons develop students who can use what they learned before to solve problems in new learning situations by making connections?' This makes the action research focus explicit and shows a more holistic approach to lesson design, affording a broadening of the professional conversation.

After the first meeting with our project group, the staff decided that we would start with two groups of teachers in the school working with us, with the goal of developing mathematical talk and dialogue. Together we would develop a *variation* of the Japanese lesson study model and report back to the whole staff on our progress.

The model was to identify a mathematical topic or process area currently seen as important for a particular class of children, jointly plan a lesson, identify roles and what we are looking for to report and discuss, and have one teacher leading the session but have the rest of the lesson study team actually working with a group of children rather than simply observing (as in the Japanese model). Two of us worked with two groups of three teachers. Both groups comprised two 'neighbouring' teachers and a teaching assistant. Thus, at any one time, there were five of us involved in each lesson study cycle and present in the classroom.

The teachers leading the lessons (with their own class) were initially apprehensive about being watched and judged in 'performance', but this seemed to fade as the collaborative nature of the lesson planning took hold and we developed a shared research focus on the children's responses rather than on the teacher leading the lesson. We were all engaged as active participants in *every stage* of the lesson study cycle: planning, preparing resources, participating in the actual lesson, contributing in the debriefing analysis, and deciding the next steps and refinement of practice. So our team differed significantly from the Japanese practice in that we were all engaged in the actual lesson; talking with our group of children, indicating to the lead teacher that a child had something to offer, and also asking questions, through the lead teacher, of children who were presenting ideas. The lessons were therefore not as tightly 'scripted' as the Japanese lessons.

The two teacher groups reported their work on developing mathematical dialogue to a whole staff dissemination event, held mid-year on campus at one of our

universities. They re-visited the purpose of the project, showed their colleagues how the practical tasks that had been designed in the lesson study cycle had supported the children's mathematical reasoning in peer and class discussion, and drew some conclusions about their curriculum. The use of mathematical models and tools was a particular theme, as were the verbal prompts that the teachers had been developing in literacy lessons, e.g. "I agree with . . . however . . . I think . . . because . . . ". The teachers displayed some of the children's work (the children's own video recordings and transcriptions of peer and class interactions, the children's photos, drawings, and written explanations) and these were discussed with obvious enthusiasm and professional engagement by all their colleagues.

The Year 6 group had used measurement activity to develop understanding of place value, and several teachers were surprised by the evidence shown and noted: "The children could not explain tenths and hundredths", "I think we teach place value unrelated to reality" and "We need to be teaching in a context". The Year 4 group had focused on the use of models in particular to develop multiplicative reasoning (for division), and their teacher reported that it had been a revelation to see how the children used the models to reason and, under the teacher's challenge, to "prove it!". The teacher said "It's about shared understanding (in the classroom)". Another lesson study teacher who used ideas from the project lesson back in their own class said "Repeated activity is magic", "We don't give children credit for listening".

The teachers orchestrated a professional discussion around their conclusions about pedagogy drawn from their lesson study. One teacher presented the following points:

> The adult should 'sit back' for 60 % of the time in group discussions and guide for 40 % of the time.
> The word 'model' should be in our maths curriculum from Reception.
> Having an established role in a group is important to enable discussion.
> There needs to be evidence in maths books of the way in which a child logically works though a problem.

In summary, we draw the following observations from our lesson study development. The 'space' created by the project for experimentation and risk-taking was essential. The commitment of management to risk a different type of development, and the involvement of the research team as an outside stimulus that gave the work a certain kudos, helped to establish this.

- The lesson study practice evolved in local conditions to the point, perhaps, where a Japanese teacher/researcher might deny this was lesson study proper. Yet the systematic and collaborative inquiry based on the children's mathematics was a common characteristic: with consequences for the growing trust and professional solidarity of those involved.
- The focus on dialogue in classrooms was supported by the lesson study research practices of listening to, recording, and analysing children's mathematical arguments and reasoning in dialogue; we claimed this is a hybrid research-teaching practice (see Williams and Ryan in press);
- Discussion and analysis in the lesson study group entered the staff room, and other teachers became informally involved in trying out activities and discussing

findings; these reflections and discussions entered formal staff meetings too, and were believed to be a significant outcome of the project impact for the school.
- While test outcomes are said to be improving, we are puzzled as to whether or how evidence of causal connection can be found.

A key result for this work seems to be the ways in which the lesson study project fitted into the particular English performative culture: the lesson study's freedom to take risks was hedged by:

1. A commitment to risk due to the personal beliefs of and articulation of a convincing rationale by the school's head teacher, deputy head teacher, senior management and subject co-ordinator (in part the reason why the researchers chose to work there);
2. The risk being somewhat limited in time (there was, to some degree, a move 'back to the usual' when the lesson study was over, and nearing tests in assessment week);
3. An enrichment of resources due to the outside commitment.

Case Study 2: Secondary School Project

Our work with secondary schools (authors Morgan and Williams) began with a successful bid for a government–funded (TDA)[7] project. Teaching Schools[8] were invited by the TDA to bid for funding for a pre-service teacher education research and development project. When writing the bid the school had to identify an outstanding pre-service teacher education provider to work in partnership with. This enabled the Teaching School to work with colleagues from the university, with one colleague (one of the authors, Morgan) previously appointed to a joint role in both the school and the university. Additional schools were invited by the Teaching School to participate in the Lesson Study Project with the aim of enhancing questioning and dialogue in mathematics classrooms. The six additional schools involved with the project were either part of the Teaching School alliance or were university pre-service teacher education partnership schools.[9] The project involved pre-service teachers, as well as experienced teachers and colleagues from the university. This was initially a two-term project, but it is envisaged that colleagues may wish to extend this project in the future, and some are already doing so.

The project funding allowed colleagues to meet on two occasions, initially for a full-day conference to outline the project, and then for a half-day conference (two months later) for reporting back and planning next steps. Facilitated lesson study

[7] The TDA (Training and Development Agency for schools) became the Teaching Agency in April 2012 and then the National College for Teaching and Leadership in April 2013.

[8] Teaching Schools: a government designation that gives outstanding schools a leading role in professional development.

[9] Teaching School alliance: a group of schools and other partners supported by the leadership of a Teaching School (Department for Education). University partnership schools: schools that work in partnership with universities to provide placements for pre-service teacher education students.

work took place in between. Most participating schools involved two mathematics teachers and, where possible, two pre-service teachers. These lesson study groups were expected to engage in at least one round of lesson study together (joint lesson planning, joint teaching the lesson, and joint analysis and review), between the conferences so they would have findings to report.

An article was provided, prior to the April conference, to give colleagues some background to lesson study in Japan—*'A lesson is like a swiftly flowing river'* (Lewis and Tsuchida 1998). The initial conference was attended by two teachers and two pre-service teachers from each school, with more from the host school. Colleagues from the university and Teaching Agency also attended. The day started with an initial mathematical activity that modelled a classroom strategy to encourage dialogue, and colleagues were introduced to Japanese lesson study through video snippets of a Japanese lesson that had been studied. Also, video footage of a lesson study lesson taught at the Teaching School was shown and discussed. Colleagues then discussed strategies to enhance dialogue and questioning in the mathematics classroom, and they began their joint lesson planning for lesson study before leaving the conference. The atmosphere was very positive and colleagues seemed enthused and eager to start.

All lesson study groups were facilitated by a colleague from either the university or the Teaching School. Care was taken to ensure that this colleague remained a member of the group and did not take a lead. This was more difficult in certain instances, where some colleagues expected the facilitator to lead because of their experience and role; in some cases they were the university tutor for the pre-service teacher(s) in their groups. The complexity of this role is discussed by Corcoran (2011); in the lesson study groups that she convened, with third-year Bachelor of Education students, she feared that power relations would be counterproductive to the process. The groups all did at least one lesson study cycle, with some managing to repeat the lesson one or two times with different classes, refining the lesson each time. All focused on enhancing dialogue and questioning, but in a variety of different ways, involving various mathematics topics. It was interesting that some lesson study groups chose to share learning objectives with their classes that were not topic-based but that focused on skills linked with questioning and dialogue.

The focus on dialogue and questioning was, for some colleagues, quite different to the norm, and the legitimacy of this style of teaching was questioned with reference to government inspections. Colleagues were somewhat reassured when a school that had taught in this way was inspected and came out of it positively. Ofsted (the external inspectorate) and performance management are prevalent in teachers' minds. We therefore expected these issues to be raised at some point during the initial conference. Both teachers and pre-service teachers were concerned about the pace of progress when planning these lessons. This related to Ofsted requirements that teaching should show that all students have made progress, even in the 20 minutes or so in which they were to be observed.

For schools that had many teachers and pre-service teachers in the lesson study classroom (where each adult worked individually with a group of learners) there was a concern that the lesson would be difficult to replicate with just the one teacher present, as would normally be the case. In future lesson studies, they thought this would need to be considered during the planning or when reviewing the lesson.

In the final conference, the teachers reflected that they had gained from working with colleagues, from having a focus on questioning and dialogue, and from reflecting on their own practice, in a non-threatening way. The following comments in their reports were indicative of the reflections we collected:

> Other members of the department were involved in the delivery process as well as people from outside the school—this collaboration allowed the exploration of ideas and processes. Running a lesson study allowed me to see how much this kind of activity benefits the pupils, therefore the dialogue and questioning techniques are something that I will focus on in planning lessons.
> The chance to step out of my comfort zone and have whole class discussion for the entire lesson.

Similarly, the pre-service teachers commented that they valued both working collaboratively with their experienced colleagues and the sharing of ideas and approaches. Some also commented on an increased confidence to try out new ideas.

> Good lesson suggestions from other schools. Motivation to try these out!
> Got to plan with experienced staff and tweak things. Enabled me to make sure all my pupils made contributions in a lesson.
> A chance to explore new teaching methods. An opportunity to see how pupils reacted to this kind of teaching. Evaluation with colleagues.

As with the primary school lesson study, these reflections suggest that lesson study is valued as a collaboration in which professionals can discuss together, free from inspection and threats of grading of performance. The freedom to take risks was again here hedged by the three factors: the support from senior management, an externally-resourced project, and a time-limited commitment. The experiences of one of the seven schools involved with lesson study through this project will now be described below in more detail.

The Radcliffe Lesson Study Group

In one lesson study group at Radcliffe school,[10] the group chose to develop an 'investigative' lesson on number patterns. Examples in the syllabus include linear sequences like 4, 7, 10,... and 2, 5, 10, 17,... (see Fig. 9.1). The university tutor suggested: (i) that such patterns should also reveal and be supported by geometric representations, and (ii) an old pack of materials from the Nottingham Shell Centre could be used which included such examples, teaching plans, computer programmes and videos.

The lesson was planned by an experienced teacher, who is used to more dialogic pedagogic practices, with three pre-service teachers and the first author. As an investigative lesson it was perhaps not that risky for this experienced teacher in the school, but was atypical for many teachers and for the pre-service teachers in that school. The group decided to use matchstick models for the first sequence, and growing squares for the second. The teacher was to lead the lesson, and decided to try

[10] The name of the school has been changed.

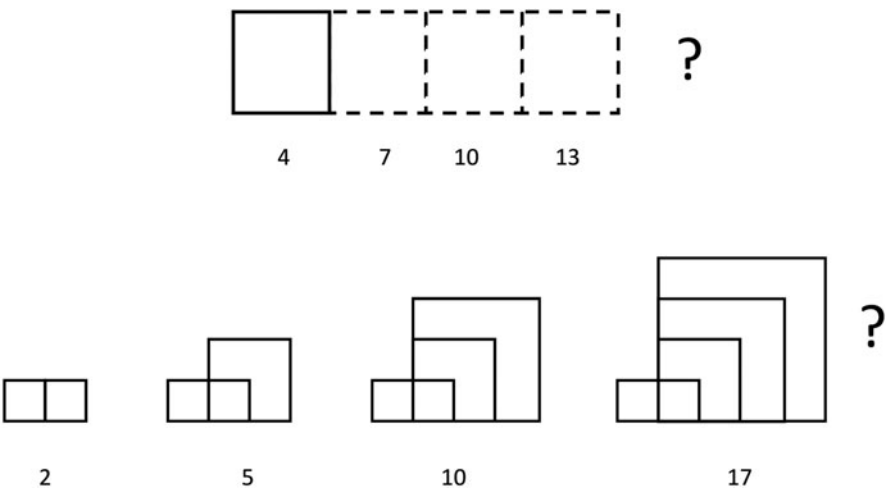

Fig. 9.1 Match-stick and squared-grid patterns for number sequences

'not to tell', but rather to 'ask for reasons', and even 'suggest wrong answers if necessary' to get the children to reason and argue.

Post-lesson analysis included the suggestion that the two different contexts of sticks and squares might not be as clear as if a similar context was used in linear and quadratic cases. It was suggested that the linear case using squares might provide a dramatic contrast to the quadratic pattern, facilitating the point that quadratic patterns look more like growing two dimensional square-ish objects, while their differences are growing like linear patterns. As a result the team tried out this suggestion, and found this did not work well, because the linear pattern appeared too obvious and uninteresting to the learners.

A further interesting observation was made by pre-service teachers who tried out this lesson on other classes. They said when they tried it that they had many difficulties in keeping 'order and discipline', with children chatting and being difficult to 'bring back' to attention for class discussion. This was regarded by them as a real threat, as they felt their own grades for such lessons would be poor. A major factor in this seemed to us to be the fact that pre-service teachers were placed in the position of taking the lead in changing established, traditional practice in experienced teachers' classrooms. This seemed a decisive threat, and made us question whether pre-service teachers in such a situation could benefit fully from lesson study in the English context unless they had the full support and indeed leadership of their mentors and more experienced colleagues. In the event that pre-service teachers lead in taking such risks, at least the lesson study must relieve them of perceived threats of evaluations of their success, in conditions where evaluations of classroom management of their lessons appear to them often paramount.

Additionally, it should be noted that the report of this lesson study to the wider lesson study seminar (with teachers and pre-service teachers from other schools) drew attention to the way such lessons might be evaluated by inspectors: it seemed

important that the teacher leading this class had been recently formally inspected teaching 'lessons like this' and had been highly graded. Thus we could say that the value of this commodity lies not only in its 'use' as a means of teaching for understanding, but has to establish its exchange value in the school cultural economies of surveillance and inspection.

Lessons Across the Study

In sum, we drew the following lessons from these lesson studies:

First, the lesson study practices varied from school to school, and occasion to occasion, and was very different from those reported in Japan and in some other countries. This suggests we are in a period in which systematic practice is still unsettled and uncertain, and its place within the culture is being formed.

Second, there was an almost universal perception that this work provided a very different development opportunity, relatively free from the performance management threats teachers normally experience from classroom observations and feedback. This was perhaps less so for the pre-service teachers in this context, which we attributed to the power relations with their lesson study colleagues (school mentors and university tutors) as Corcoran (2011) previously observed. It would be important in future to explicitly insulate their lesson 'grading' from their experimentation with the lesson study practice.

Third, there seemed to be special reasons in each case that persuaded school management to take part in the projects, and we suspect this will only be sustainable if a case can be made that helps management justify the resource in performance terms. There is a real threat to the way lesson study might develop within a performance management context, here, given the first two points.

We conclude that the future of lesson study in this cultural context is wide open: the tension between the self-organising elements of professional development on the one side and the accountability of professionals to performance management on the other will no doubt continue to shape its course and the way it settles into the professional culture in England. We must anticipate the need not only to establish the use value of lesson study, but also manage the culture of performance management, from which it requires some value. No doubt this value (we call exchange value) is related to its use value in teaching and learning, but not necessarily always directly so, since it is mediated by a wider cultural economy in schooling (see Williams 2011, 2012).

Discussion and Conclusion

We began with a view that there is much to be gained from consideration of different cultural practices in teaching development and teacher learning. Over the last decade, the ascendancy of international comparisons of *children's performance* in

mathematics, and inferential judgements of *teacher performance*, had resulted in political interference/direction and external 'fixes' that, we believe, had impoverished classroom practice and demoralised the teaching profession. Teaching development had been effectively taken from the teachers.

However, we thought that examination of another cultural practice—Japanese lesson study—provided an opportunity to see what *could be* if teachers were in control. This professional practice reverses the top-down flow of authority and crucially involves teacher collaboration and research-based practice. We did not seek to import the practice but rather to use it as a frame which could evolve under local conditions in the hands of teachers.

We have described and analysed what lesson study is beginning to look like in England's primary and secondary schools, where the performativity agenda still rules and where teacher professional learning has been dominated by graded lesson observations and scrutinised in the light of national league tables. We theorised this performativity in social terms, using the concept of commodification of education and the use and exchange value of knowledge. It does no harm to the lesson study cause to observe that mathematics learning in Japan scores well, for instance, even though we have no evidence of causal connection.

We noted teachers' initial fears that lesson study could involve yet another watch on their performance. However, these concerns were allayed once the nature of lesson study was shown to involve professional practice that the teachers created, evaluated and controlled. The joint practice of inquiry, the formulation of different types of lesson goals, the focus on what children do and think, and the opportunities to develop professional conversations were all reported by them as new and engaging. The teachers began to take a wider view of a curriculum informed by their research in their classrooms.

However, the support of the system (e.g. from senior management) was shown to be crucial in providing the 'space' for lesson study practice to evolve, and in allowing risk-taking and investment in time to support long-term change in practice that was owned and directed by the teachers. We 'outside' mathematics educators were able to provide research evidence from the wider field, key readings and activities, and another viewpoint to add to the professional conversation. We see such provision of resources as vital if we are to move from performativity to giving teaching back to teachers.

Our work with teachers in schools shows that there is potential to change the 'cultural script' through the evolving lesson study practice that values ongoing collaboration and research, and that works to improve children's engagement with *inquiry and dialogue* in mathematics in their classrooms.

> Within a culture, people have common mental pictures of what teaching is like, what teachers in a classroom do, and what students do. These mental pictures are scripts. These cultural scripts, which are often implicit, guide students and teachers to know what role each is to play in a classroom. But cultural scripts are social constraints or affordances and only guide, not determine, actions on the parts of individuals. (Corey et al. 2010, p. 439)

We are learning much from these lessons about the performance culture and what Wenger (2009) describes as the 'vertical' component of accountability it demands

(i.e. as opposed to the horizontal accountability to know-how that our professional community of practice demands, perhaps including our fellows, peers and students/children). We argue that the lesson study culture can respond to the performativity agenda by pointing to the policy failure of teaching-to-the-test in the long term, and of the need to address and broaden the range of learning outcomes. In particular, it responds to the need for a lifelong professional learning culture of improvement that stands up to onslaughts of political short-termism and robustly asks 'where's your evidence?'.

References

Adey, P., & Shayer, M. (1994). *Really raising standards*. London: Routledge.

Advisory Committee on Mathematics Education. (2011). ACME Position paper on early and multiple entry to GCSE mathematics. http://www.acme-uk.org/news/news-items-repository/2011/5/position-paper-on-early-and-mutiple-entry-to-gcse-mathematics. Accessed 10 Dec 2012.

Barrow, R. (1984). *Giving teaching back to teachers: A critical introduction to curriculum theory*. London: Wheatsheaf Books Ltd.

Bartalo, D. B. (2012). *Closing the teaching gap: Coaching for instructional leaders*. London: Sage.

Bell, A., Burkhardt, H., & Swan, M. (1992). Balanced assessment of mathematical performance. In R. Lesh & S. Lamon (Eds.), *Assessment of authentic performance in school mathematics* (pp. 119–144). Washington DC: American Association for the Advancement of Science.

Black, P., & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education, 5*(1), 7–74.

Corcoran, D. (2011). Learning from lesson study: Power distribution in a community of practice. In L. C. Hart, A. S. Alston & A. Murata (Eds.), *Lesson study research and practice in mathematics education: Altogether* (pp. 251–267). London: Springer.

Corey, D. L., Peterson, B. E., Merill Lewis, B., & Bukarau, J. (2010). Are there any places that students use their heads? Principles of high-quality Japanese mathematics instruction. *Journal for Research in Mathematics Education, 41*(5), 438–478.

Hart, L. C., Alston, A., & Murata, A. (Eds.). (2011). *Lesson study research and practice in mathematics education: Learning together*. London: Springer.

IEA. (2012). Trends in international mathematics and science study 2011. http://www.iea.nl/timss_2011.html. Accessed 3 Oct 2012.

Lewis, C. C. (2002). *Lesson study: A handbook of teacher-led instructional change*. Philadelphia: RBS.

Lewis, C., & Tsuchida, I. (1998). A lesson is like a swiftly flowing river. *American Educator, 22*(4), 12–17.

Mathematics Group at Maruyama. (2006) 3rd Grade Mathematics Lesson Plan: 'Multiplication Algorithm (1)' led by Hideyuki Muramoto, Sapporo City Maruyama Elementary School. http://hrd.apec.org/index.php/Multiplication_Algorithm_Grade_3_%28Japan%29#Lesson_Overview. Accessed 10 Dec 2012.

Pampaka, M., Williams, J. S., & Hutcheson, G. (2012a). Measuring students' transition into university and its association with learning outcomes. *British Educational Research Journal, 38*(6), 1041–1070.

Pampaka, M., Williams, J. S., Hutcheson, G., Wake, G., Black, L., Davis, P., & Hernandez-Martinez, P. (2012b). The association between mathematics pedagogy and learners' dispositions for university study. *British Educational Research Journal, 38*(3), 473–496.

Parliamentary, R. (2011). http://www.publications.parliament.uk/pa/cm201011/cmhansrd/cm110207/debtext/110207-0001.htm#1102076000004. Accessed 3 Oct 2012.

Power, M. (1997). *The audit society: Rituals of verification*. Oxford: Oxford University Press.
Ryan, J., & Williams, J. (2012). Children's argumentation in primary school mathematics: the use of models and tools to support reasoning and explanation. Paper presented to the Annual Conference of the British Educational Research Association, September 2012.
Schraw, G. (2002). Promoting general metacognitive awareness. In H. J. Hartman (Ed.), *Metacognition in learning and instruction: Theory, research and practice* (pp. 3–16). Dordrect: Kluwer.
Stigler, J., & Hiebert, J. (1999/2009). *The teaching gap: Best ideas from the world's teachers for improving education in the classroom*. New York: Free Press.
Stigler, J. W., & Hiebert, J. (2009). Closing the teaching gap. *Phi Delta Kappan, 91*(3), 32–37.
Strathern, M. (Ed.). (2000). *Audit cultures: Anthropological studies in accountability, ethics and the academy*. London: Routledge.
Sturman, L., Ruddock, G., Burge, B., Lin, Y., & Vappula, H. (2008). England's achievement in TIMSS 2007: National report for England. Slough: NFER.
Wenger, E. (2009). Social learning capability: Four essays on innovation and learning in social systems. Social Innovation, Sociedade e Trabalho booklets, 12—separate supplement. Lisbon: MTSS/GEP & EQUAL.
Williams, J. (2011). Audit and evaluation of pedagogy: Towards a cultural-historical perspective. In T. Rowland & K. Ruthven (Eds.), *Mathematical knowledge in teaching* (pp. 161–178). Dordrecht: Springer.
Williams, J. (2012). Use and exchange value in mathematics education: Contemporary CHAT meets Bourdieu's sociology. *Educational Studies in Mathematics, 80*(1), 57–72.
Williams, J., & Ryan, J. (2000). National testing and the improvement of classroom teaching: Can they coexist? *British Educational Research Journal, 26*(1), 49–73.
Williams, J., & Ryan, J. (in press). Research, policy, and professional development: designing hybrid activities in third spaces. In V. Farnsworth & Y. Solomon (Eds.), *What works in education? Bridging theory and practice in research*. London: Routledge.