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Research Lesson Study:

a handbook

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This booklet is a guide on how to use and lead Lesson Study (LS) to research and improve learning, teaching and curriculum. It uses a close variant of Japanese LS developed over 20 years in England called 'Research Lesson Study' (RLS). The key features that distinguish RLS are:

- The use of **'case pupils'** that enable the LS group to focus upon and 'see' key aspects of pupil learning
- The use of **pupil interviews** to help gain insights on the pupils' perspective on their learning in the research lessons
- Iteratively developing **sequences of research lessons** rather than just one.

Lesson Study (LS) is a highly specified form of classroom action research focusing on the development of learning, teaching and curriculum. It has been in use in Japan since the 1870s. LS therefore pre-dates action research by some 70 years.

LS is a form of collaborative classroom action research by a group of teachers. They put usual practice under review, they search-out and consider alternatives or innovations, conducting studies of their pupils' learning, adjusting and honing their new approaches. They form tight-knit teacher learning communities as they do.

Taking part in collaborative enquiries into improving teaching and learning is the **single most impactful action a school leader can take to improve educational outcomes for pupils**. (Robinson et al 2009)

LS only became popular in the West this century following the success attributed to it by US researchers in developing deep teacher understanding of pedagogy, of subject and of their pupils as learners. This leads to high standards of educational attainment by Japanese pupils when compared with those of comparable groups of pupils in the US (Stigler and Hiebert, 1999; TIMSS, 1999).

In Asia LS is in widespread use beyond Japan. In the West LS was used initially in the US and is spreading rapidly in Europe and the Americas.

Research Lesson Study has been used successfully in the UK to improve learning, teaching and curriculum in primary and secondary schools and to develop broader pedagogic strategies such as assessment for learning (AfL) and Oracy. During a RLS cycle three teachers (or even a pair):

- Use data they have gathered from day to day and periodic assessment to agree a focus for the pupil learning and progress
- Jointly study and critique curriculum materials they are using and research beyond these to refine the focus and identify approaches to address that need (often with expert input) from which a research question or proposal is created
- Identify around three 'case pupils'. Each could typify a group of learners in the class.
- Jointly plan a 'research lesson' which both uses develops and closely studies the effects of this new approach –.and keeps in mind the three case pupils.
- Teach and jointly observe the research lesson focusing on the case pupils' learning and progress and adjust and refine teaching over several lessons on the basis of their analysis of each.
- Interview a selection of pupils to gain their insights into the research lesson.
- Hold a post-research lesson discussion analysing how the case pupils responded to the technique, what progress they made, what evidence of learning or of difficulties with learning they displayed and what can be learned about the way the teaching or learning approach is further developed – next time.
- Formally share the outcomes with a wider audience of other teachers – in a presentation, by demonstration or by coaching.

Guidance for each of these stages is unpacked in the sections of this booklet , drawing on what we know about how Lesson Study works in settings worldwide. The final two sections provide ideas on how school leaders can

a. Create time for Lesson Study and build it into school systems
b. Use leading practitioners to support the professional learning from Lesson Study and the RLS model as a platform for in-school coaching.

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Pete Dudley introduced Lesson Study (LS) to the UK conducting his first Lesson Study in 2001. Later he ran the national Lesson Study pilot (2003-5) funded by the ESRC, the National College for School Leadership and CfBT. The model is a close variant of Japanese LS called 'Research Lesson Study' (RLS). It continues to evolve.

Pete has been president of the World association of Lesson Studies since 2017. He supports LS research in the UK and Japan and conducted extensive LS research at the University of Cambridge where he now runs a Masters in Educational Leadership and School Improvement www.educ.cam.ac.uk He promoted professional learning through LS in thousands of schools as Director of the government's Primary National Strategy (2006-11) and later as Director of Education in Camden London (2013-19). He founded www.LessonStudy.co.uk in 2011. His international LS development work has focused on Europe but also Singapore, Palestine, Kazakhstan, Thailand and Indonesia. He is a Senior Member of Hughes Hall Cambridge, of Oracy Cambridge and an editorial board member of the International Journal for Lesson and Learning Studies (Emerald). This booklet has been translated into seven languages.

About Lesson Study

LS was first developed in Japan in the 1860s and 70s. It is a form of sustained collaborative, action research into learning and teaching in lessons which aims to constantly improve curriculum, practice and consequently pupil learning and achievement. It involves groups of teachers studying their school's curriculum and materials; their pupils' learning and achievements in relation to aspirations and goals; and it also involves researching approaches used elsewhere. Group members then carefully design and jointly conduct and observe pupils' learning in 'research lessons' which are jointly analysed. They may re-design subsequent research lessons, involve experts from within or outside the school and they always record and share the new practices or curriculum they have developed together usually through an 'open house' research lesson.

LS only travelled beyond Japan in the late 1990s. It was used in China from the 1940s, the US from the 1990s. Its variant 'Learning Study' began in Hong Kong and Sweden in the early 2000s which is when it was developed in this form in the UK. By 2020 it had spread to over 80 countries.

About this handbook

This handbook has been a mainstay for thousands of schools getting LS started successfully. This fifth edition has been updated with latest research findings and developments. It provides new sections looking at LS as a powerful mechanism for teacher learning, as a forger of learning communities and as a driver of system learning and improvement that harnesses pupil agency and voice and which focuses on pupil learning and achievement.

Acknowledgements

This handbook comprises original material and also draws upon material I wrote for the National Strategies (2008, 2010), the National College for School Leadership (2003, 2005), the Teaching and Learning Research Programme (TLRP) and CfBT.

The research drawn upon in this publication and was carried out by the author between 2003 and 2011 at the University of Cambridge with the assistance of a fellowship awarded by the Economic and Social Research Council and was runner-up in the 2012 British Research Association (BERA) Doctoral Thesis Awards. It also draws upon development research conducted by Cambridge with the London Borough of Camden and funded by the Greater London Authority (2013-17).

I would like to thank my co-authors and LSUK partners Jean Lang and Haiyan Xu who have played huge roles in the evolution and development of RLS and LSUK.

I would also like to thank all the teachers, head teachers, local authority staff, academics, policy makers in the UK and worldwide who have enabled and contributed to our knowledge and understanding of Lesson Study.

Every Lesson Study is a shared endeavour to add to the knowledge-base of each professional, each setting and each culture. It is founded on professional generosity; trust; rigour; systematic collective agency and community. Without these qualities and values the magic and rewards LS conjures up simply would not happen.

Pete Dudley

Hughes Hall, Cambridge, 2020

a. Why conduct a Lesson Study

Well first of all because Lesson Study blends all the features of professional learning that most improve learning and teaching (Cordingley et al., 2004). These are that:

- The professional learning takes place over time – and is not a one-off event
- It happens in real classrooms with real pupils
- It involves an element of collaborative enquiry or experiment between teachers who are trying to solve a problem or improve an approach. Hargreaves uses the term 'joint professional development' - JPD rather than CPD – (Hargreaves 2012).

Lesson Study helps teachers to:

- Observe pupils' learning with arresting clarity.
- See the difference between what they predict will happen when pupils learn and what actually happens.
- As a result, understand how to design, engineer and bring about learning much more closely matched to pupil needs.
- Do this within a supportive teacher-learning community committed to providing a safe space to take risks because each values and feels valued-by their lesson study group.
- Research, reflect, analyse and learn collaboratively how to help their pupils learn and achieve (Dudley, P. 2013).
- Change subsequent teaching and curriculum in order to better support learning and share this involving expert practitioners and less experienced peers in order to maximise and mobilise the new knowledge.

RLS creates a unique way in which teachers can learn and develop their practice knowledge together that impacts on the learning of their pupils and builds their school's capacity for further improvement.

Teacher learning and practice knowledge development

The simple fact is that successful teachers are largely blind to much – perhaps even to *most* - of what is happening in their classrooms. This is *not* a failing! It is the result of processes that have enabled them to become successful teachers.

This is why. Classrooms are amongst the most complex, unpredictable, fast-moving work environments that exist. The information generated by 30 or more learners engaged in a lesson is vast. So is the speed at which the information comes at a teacher. Lewis (1999) quotes a Japanese expression 'a lesson is like a swiftly flowing river'.

Studies of how teachers cope with this complexity and speed (Wragg et al., 1996) found that teachers make over 30% more decisions than other professionals. Those who survive their first three years and become good teachers, only do so because every time they discover a new way of managing a complex or tricky teaching situation, they rapidly internalise the new practice knowledge in a form that can be drawn upon *unconsciously* when it is next needed in the classroom. Pedagogical Content Knowledge (PCK) in this tacit form is invisible to our conscious thought and so tends to be knowledge that we 'don't know we know'. This is like our knowledge of how to ride a bicycle. It only manifests itself when it is needed and the more you try to think consciously how you are using it while cycling, the more likely you are to fall off the bike. But it quickly 'comes back to you' whenever required – even after a long time – like riding a bike!

Unlike most animals, human beings have learned to deal with high volumes of information by filtering. For example, we actively pay attention to a tiny proportion of the sounds that we technically 'hear'. We have evolved methods of filtering out extraneous information and paying attention only to what is important or very unexpected. These filtering mechanisms have enabled us to focus-on and process what we have identified as important in achieving our goal. In the classroom, we do the same. We focus on the most critically important aspects of what is happening at any one time, filtering-out a lot of extraneous events and information. We deal swiftly with important new PCK gained by storing it immediately and unconsciously in tacit form. All this leaves our conscious working memory free to deal with the next important things we have prioritised in the lesson. Our unconscious processes log that we know this and can retrieve the knowledge for instant use – but we do not know it consciously (except when we see ourselves teaching on video and wonder 'Is that really me?'

Because teachers tend to practice in isolation as lone professionals with their classes, other teachers seldom get an opportunity to see others' tacit practice knowledge manifested in action. And when a teacher's practice is observed by another professional it is more likely to be in the context of a judgement of performance than in a context of professional learning. In such contexts teachers tend to play safe rather than take risks. RLS, however, creates safe spaces where teachers can take risks together and fearlessly work on areas of the curriculum in which they feel less confident or secure. 'Ground rules for Talk' (Mercer, 2010) and the RLS Group Protocol (see page 7) make it so safe to learn together that members of RLS groups swiftly begin to solve teaching problems together using 'exploratory talk' (Mercer 1995) and 'meaning oriented teacher learning learning' a powerful form of teacher learning that enables teachers to improve their pupils' learning in greater abundance than other forms of professional learning studied. (Dudley et al. 2019b; Vermunt et al. 2019).

Lesson Study helps both experienced and less experienced teachers to learn professionally. Because, through its processes of joint planning, joint observation and joint analysis, we collectively imagine and predict pupils' learning. So, we get to see aspects of pupil learning through the eyes of others as well as through our own, and we compare actual learning observed in the research lesson with the learning we imagined when we planned it. This forces us to become conscious of things we would normally not be conscious of either because we would filter it out or because it would be dealt with through our tacit knowledge system.

Why 'case pupils', pupil interviews and design-cycles of research lessons are important

RLS uses 'case pupils' in lesson studies to optimise this. Many have said that focusing on and thus becoming more aware of the learning needs and behaviours of individual 'case pupils' makes them much more aware of the individuality of all their pupils. So instead of teaching to a fuzzy 'middle' with groups of high and lower achieving pupils on either side, Lesson Study helps teachers to be more aware of the needs of individuals in their subsequent teaching, and to do so without being overwhelmed by the experience. In fact people say 'I realised for the first time that she learns in a very different way to how I thought, and I realise there are three others like her in my class'. Lesson Study can therefore be very useful for finding out about and improving the learning of children who are underperforming, who have specific needs or who are from groups of learners who typically underachieve such as children from deprived households or in care. It also gives their school 'forensic visibility' of them (Dudley et al. 2019b) which is needed if teachers are to monitor their learning and progress and ensure they succeed.

My research (Dudley 2013) indicates that this may be as a result of the fact that the reflexive, recursive deliberate processes of RLS combined with its collaborative, dialogically-engineered learning, helps to unlock invisible reserves of tacit practice knowledge (PCK) accumulated by experienced teachers who in their early teaching had unconsciously utilised our ability to block-out consciousness of classroom activity that was not of immediate 'conscious' importance and instead to use tacit knowledge-management processes for storage and recall of that activity. The deliberate sequence of RLS processes reverses this process and in a controlled way allows those previously hidden aspects of classroom information that relate to pupil learning to become visible to the conscious mind again and (in the context of an effective RLS group) to be capable of retrieval. Case pupils, pupil interviews and the RLS group's dialogic-learning dynamics are two of the most important elements of RLS for enabling this remarkable process to happen. A third is the assumption that research lesson findings will lead to further tweaking and refining of learning designs in subsequent research lessons. More background information, research evidence as well as guidance and resources for trainers and school leaders on how to optimise these aspects of teacher learning in lesson study can be found here.

One phenomenon I have observed repeatedly both in my research findings and during lesson studies is that a Lesson Study group will discover that one of their three 'case pupils' is discovered to be operating at a very different level from that which the group had thought. Pupils in low attaining groups are discovered to be operating at, or even above, the levels of middle attaining groups. In some cases a pupil has been placed in low attaining group (actual groups or groups that exists in their teachers' minds) for years. Low pitch, low expectations and low challenge are the death knell for pupil progress, motivation, learning, and achievement and this happens when learning does not challenge pupils – or challenges them far too much.

On the plus side – LS brings this to light, helping such children to make better progress from that point on in their school lives.

What is the evidence of impact of Lesson Study on pupil attainment?

Evidence from the use of RLS by hundreds of leading teachers working with 'coasting schools' who used Lesson Study as a coaching approach to improve pupil progress in writing and mathematics at age 11, showed considerable impact year on year

(Dudley, 2012). This evidence was also found in the independent evaluation of this National Strategy Programme (Hadfield et al., 2011). This project involved expert 'leading teachers' joining the initial lesson studies to help with subject knowledge and PCK. More recently a DfE funded study of over 800 schools (Churches, 2016) recommended RLS as one of only two professional learning approaches demonstrating potential to close attainment gaps while also raising attainment. A large EEF study of 280 schools found that teachers and leaders were so positive about RLS that many continued to practice it after the study closed. Furthermore, the project evaluators (Murphy et al. 2017) estimated up to 40% of the 'control group' schools had actually been using lesson study. Lewis and Perry's (2017) RCT mathematics trial showed a 4.9 effect for schools using identical approaches but half with an LS component. This means control group pupils with average scores would have had top scores if their teachers had used LS.

What is the evidence of impact of Research Lesson Study

A large-scale, 96 school London Schools Excellence Fund (LSEF) project in London using 'district level' RLS to help develop schemes of learning and approaches to teaching the 2013 English National Curriculum for Mathematics found that:

(i) schools using RL increased their position relative to national while those sticking to traditional measures fell
(ii) pupils were often encountering barriers to learning that even experienced teachers had not foreseen and this led schools to continue to use RLS approaches to help inform assessment and planned learning
(iii) schools used their 'research lessons' as archetypes within their schemes of learning and as induction and training resources for new staff
(iv) Working in a blend of two district meetings a term to study curriculum, materials and approaches to the hard-to-teach and hard-to-learn aspects of mathematics and also to present the lesson studies and findings to others was highly valued by school leaders and teachers
(v) The cultural effect of this school-to-school, peer-development work helped create conditions that foster the development of learning community. At the end of the funded two years 60 schools continued to work in this way in a self-organised and entirely voluntary way and continued to improve their mathematics and to raise pupil attainment (Dudley et al 2019a; Dudley et al. 2019b).
(vi) The LSEF project helped enable one group of schools to set up an even more permanent approach to joint professional development, eventually forming a not for profit schools company of 60 very different state schools – primary, secondary, community, academy, free-school, voluntary-aided, hospital schools and special schools. Within three years of formation every school was rated good or outstanding by the government regulator Ofsted.

In addition to all this development in RLS in schools, there is currently a national transformation in HEI and many Teaching School Alliances (particularly in relation to Initial Teacher Education. RLS is also used by teachers wrokiing with children with special educational needs (SEND) to create high quality assessments and support and to develop appropriate, accessible curricula.

School systems in local authorities and MATS are increasingly using RLS as a driver for cross-school improvement and in policy circles there is growing interest in the potential for high quality 'close-to -practice' research (which RLS exemplifies) to become more closely associated with research and policy development.

Click on these links for more information, and for leadership and training materials about how RLS has been used:

- to develop **learning communities of teachers** within school-wide lesson study systems that have transformed practice, culture and standards;
- to develop **learning communities of schools** that use close -to-practice' RLS to research, develop and share new curricular and pedagogical practices with, for and on behalf of each other and improve collectively
- to develop curriculum and school improvement approaches that **systematically harnesses the ideas and views of pupils**
- to utilise Research Lesson Study within contexts of **initial teacher education in HEI, school settings and TSAs**
- to find out about approaches to use of LS in HEI and FE contexts
- to develop approaches to **learning, assessment and teaching** for children with special educational needs or disabilities (**SEND) or medical needs.**

COMING SOON

b. Getting Research Lesson Study Going

Fig. 1 The Research Lesson Study process

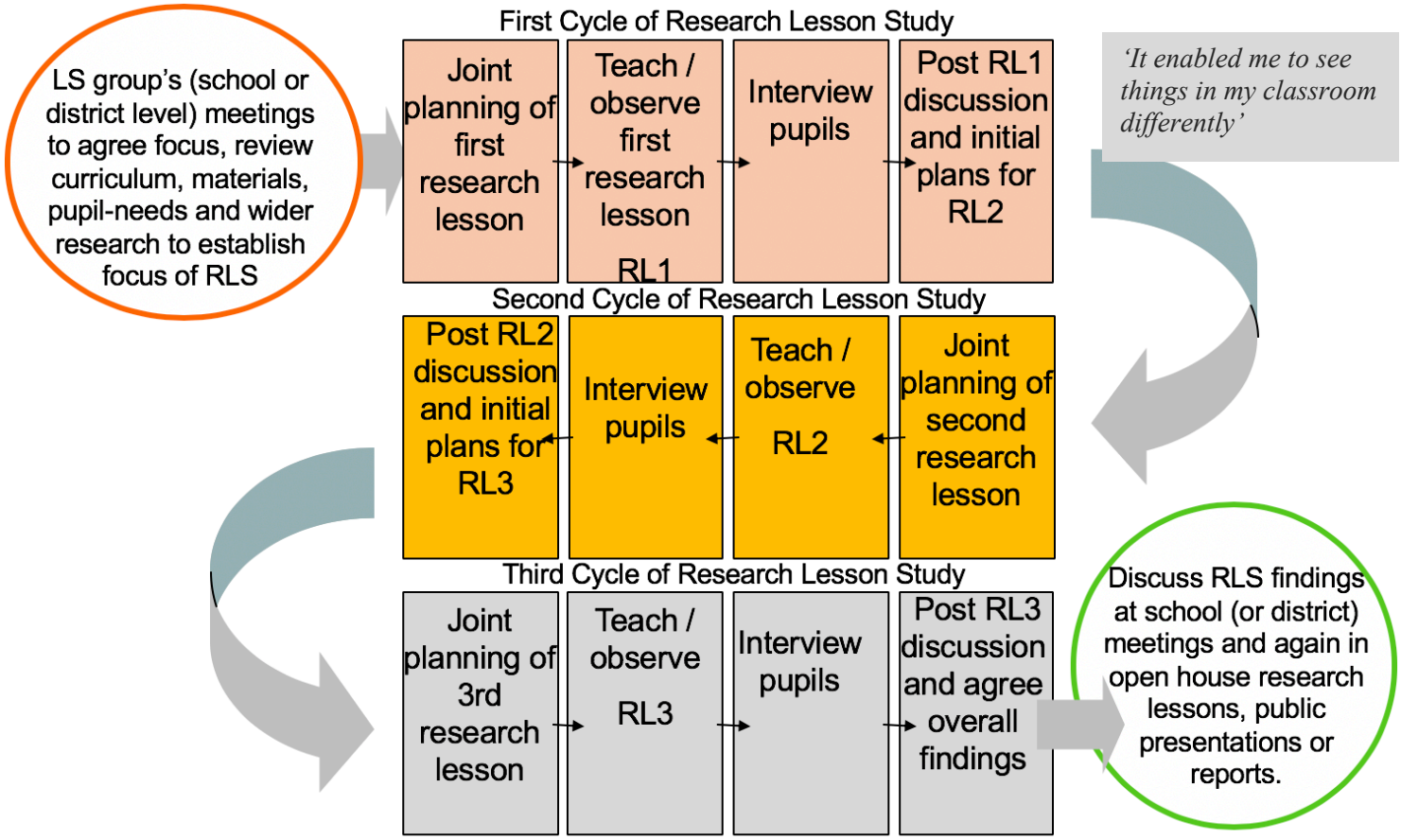


Figure 1 sets out the RLS process. The first stage in the red circle is the initial study phase in which the LS group establish the focus for the research and determine the research proposal and research questions (See page 10). Each of the horizontal blocks is a research lesson cycle of the lesson study. RLS does not cease after only one research lesson. What happens in the first research lesson (RL1) is often that you are enabled to see gaps between the pupils and the object of learning much more clearly - because of the case pupil predictions and checking. This enables you to design a second lesson (RL2) where you are able to make a better match between approach and needs. In RL3 you address any remaining issues and also tweak and hone successful aspects of RL2 to test them further. By this stage the vast majority of RLS groups have developed something that will be incorporated into their future teaching, their schemes of learning and which can be shared with others.

N.B. RL 2 and 3 are *not* adjusted repeats of RL1. They are different lessons. Generally in RLS you will use the same class to develop an aspect of learning (such as a concept, skill or point of understanding) that the class needs to be taught. RLs 2 and 3 therefore pick up and develop this aspect in subsequent lessons. For example, you may have introduced a skill/concept in RL1 and will develop and / or deepen it in RL2 and RL3. It is best to do this in a period of three weeks or so. More rarely RLS groups may design an RL to be taught in three parallel classes within a couple of weeks of each (perhaps in a six-form entry school). In this case they may indeed work on redesigns of the same lesson. The former version often yields greater rewards as we see the learning development over time.

What has worked well

As a "school leader"

Choose a group of teachers – **three works well** – who are likely to enjoy the challenge of starting up a new professional learning approach in school. Lesson Study works well when there is a member of the senior team involved and the teachers have a mix of teaching experience.

Involvement of a subject expert can be key. If the area of focus for the lesson study is a whole school priority and expertise in-house is limited it is worth bringing-in an expert to join the lesson study group for at least one RLS sequence of three research lessons and the 'open house' or knowledge sharing session (see below P. 8).

Hold a meeting with them to set out expectations and ground rules which enable people to feel free to **take risks** and not feel they are under scrutiny. In a Lesson Study all members of group are of equal status – as professional learners (see group protocol overleaf).

Create time for them to carefully review the materials and approaches currently in use, examine children's work and research again to identify or jointly develop approaches you will trial.

Use common LS formats for lesson planning, observation and analysis. (Examples you can use are in this booklet) and also make sure that the notes they keep of their observations and discussions are legible and full.

Use the RLS Workbook (also downloadable from www.lessonstudy.co.uk as a way of helping them to manage the lesson study process and all the data they gather

Give teachers *dedicated* time (an hour at least) to plan the first research lesson.

Protect their time on the day of the research lesson and make sure they can have a post lesson discussion immediately or soon after carrying out the research lesson long enough to make a start on planning the nest research lesson.

Take an active interest in how the process is going.

Make sure the LS group has dedicated opportunities to share the approaches they have developed with other colleagues – a staff meeting, a coaching opportunity or an open research lesson.

Use these members of the group as Lesson Study champions to convene and develop the next Lesson Study groups.

Develop and stick to a Lesson Study Group protocol before they get going (See example below).

Research Lesson Study Suggested Group Learning Protocol

This protocol was developed during the national pilot to help create common expectations amongst the LS group members. Adopting such a protocol helps the group to form a good working relationship that helps members to share ideas, concerns, challenges and 'wonderings' without fear of criticism. All this aids the use of 'exploratory talk' by the group which in turn aids 'meaning oriented teacher learning' (Vermunt et al. 2019) and the discovery and sharing of new practice-knowledge.

At all stages in this Lesson Study we will act according to the following:

- All members of the LS group are equal as learners whatever their age, experience, expertise or seniority in school (or beyond)
- All contributions are treated with unconditional positive regard. This does not mean they will not be subject to analysis, doubt or challenge, it means no one will be made to feel foolish for venturing a suggestion. It is often suggestions that make you feel foolish or vulnerable that are of the greatest value and generate the most learning
- We will support whoever teaches the research lesson(s) and make faithful observations, recording as much as possible what pupils say as well as do
- We will use common tools for Lesson Study – planners, pupil interview prompts and approaches to sharing outcomes with each other
- We will use pupils' work and interview comments to inform the post lesson discussion alongside our observations
- We will use the post lesson discussion flow (see page 14), starting by discussing what each case pupil did compared with what we predicted and let the discussion flow from there (See page 13)
- We will listen to each other and to ourselves when we speak and build on the discussion, making suggestions, raising hypotheses, elaborating, qualifying and at all times being accountable to our lesson aims, our case pupils and our observation and other research lesson data
- We will share what we learn – our new practice knowledge - with our colleagues as accurately and vividly as we can and in such a way that they can benefit from and try it out themselves
- We will share the aims and outcomes of our Lesson Study with our pupils appropriately, depending on their ages and stages of development. Their views, ideas and perspectives will be treated with equal positive regard.

Signed and dated by LS group members.

c & d Planning the first Research lesson and identifying the 'case pupils'

'Focusing down on the case pupils has enabled a number of really important things to be revealed'

What has worked well

Agree which class you will conduct the first research lesson in and then identify three pupils who might (a) typify different groups of learner in the class – pupils who are making good, average or below average progress in the curricular area of focus of the lesson study or in a cross curricular skill such as academic writing, or (b) pupils who are not learning or engaging as well you would have hoped in the curricular area of focus or who have specific needs or challenges.

Agree the level at which each pupil is operating in the focus area of the research lesson – below expectations, at expectations, exceeding expectations (sometimes referred to as 'at greater depth).

Review and modify your teaching materials carefully as you plan – *kyozaikenkyu* in Japanese.

Write out in full *exactly* what you want each pupil to be able to do with their new knowledge by the end of the research lesson. (You can use the planner on page 10).

Plan each stage of the lesson with particular attention to the sequence where you use the specific approach you are trialling or refining. Agree and note down on your research lesson planner exactly what you predict each case pupil will have written, said, drawn etc at this point that suggests s/he is ready to progress to the next stage of the lesson.

Identify as carefully as you can: what resources will be used and how, what you will write on the board, where and when and indicate timings for the lesson stages.

Agree who will focus their observations on which case pupil(s). (It helps to have some rules to ensure you don't all gather data about two pupils and miss the third). Have a reserve case pupil in case one is absent on the day of the research lesson.

A Research Lesson planner is provided on page 11. It should be enlarged to A3 for use. Each Lesson Study group member should have a copy at the start of the lesson because it also serves as an observation annotation sheet and the basis for the post lesson discussion.

Notes

Figure 2. Bringing your analysis of your curriculum and your pupils' learning together to form your research proposition.

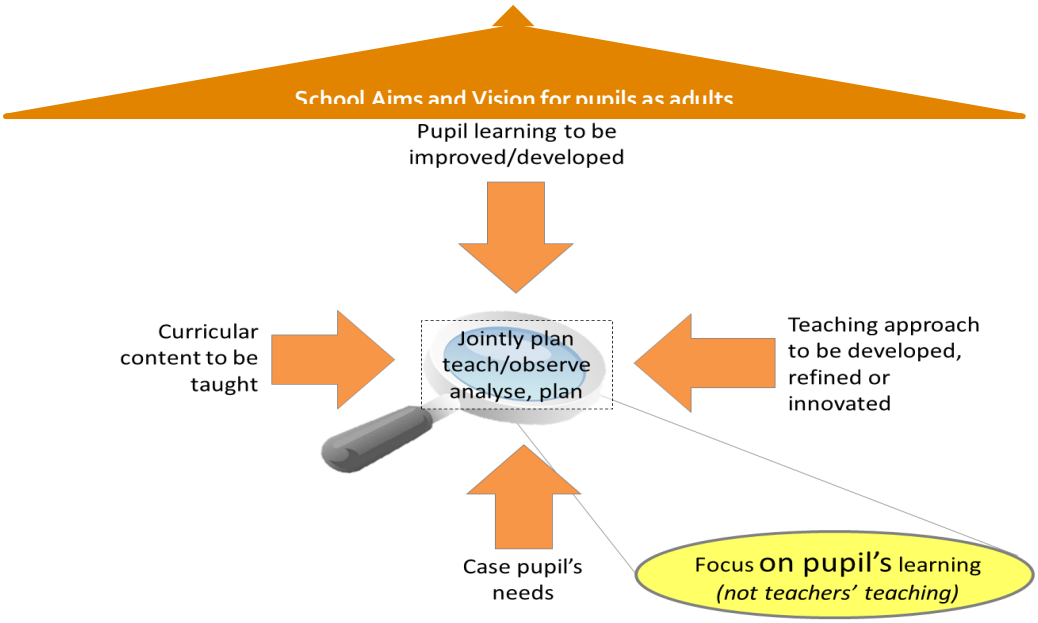


Figure 2 illustrates the bringing together of the reflections you have made about your curriculum, materials and teaching, your analysis of your pupils' learning and needs as well as any forms of approach that your research suggests may be fruitful in improving aspects of these. This is the basis of your focus and your research aim. Your research question will usually progress from 'How can we improve our pupils' learning in (curricular area) in order for them to make improved progress to ?' to 'Can (the approach(es) to be trialled in our research lessons) be used to improve our pupils' learning of (curricular area)?'

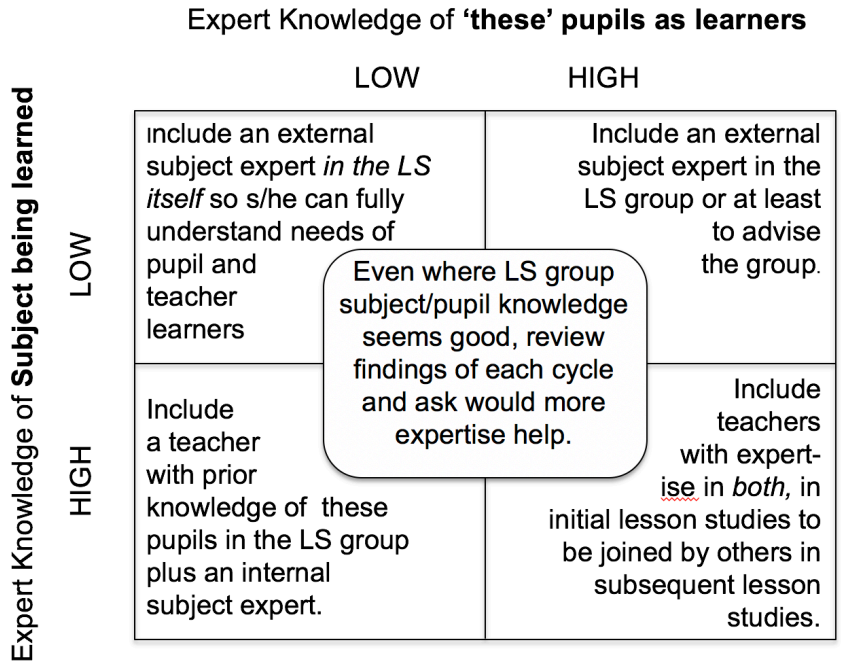
Japanese schools pay much more attention to the kinds of person into which they want their pupils to grow. These are set in their aims and vision and will usually be one of the criteria use by LS groups in carrying out their research. So, if they want their pupils to develop 'a love of nature' this may be an aspect of 'improved learning' *irrespective* of the curricular area.

Figure 4. Considerations for school leaders in optimising learning by managing expertise in the lesson study.

Managing expertise in lesson study: experts, knowledgable others and expert commentators

Three inexperienced teachers conducting a lesson study will probably do little harm but are unlikely to make the developments they could with an expert in the curriculum area, age-group (or other feature of the lesson study focus) joining the group as a full member. If the relevant expertise is not available within-house then It is worth bringing in a 'knowledgeable other' to join the group. This is likely to have more impact than a few CPD sessions after school. Such experts may also be asked to comment on open house research lessons. However, over reliance on this may reduce teachers' agency in their research because they wait for the expert opinion.

Expert knowledge of the particular pupils is also vital. Figure 4 suggests an approach to analysing and managing this balance of expertise for optimal results.



e. Teaching the first research lesson

'What's very powerful is that people felt that because they'd planned together, it made it okay if it went wrong.'

What works

Use the research lesson planner on the following page, or better still the RLS Workbook to plan the research lesson. (It works best blown up to A3). It also acts as the observation sheet (if copied and provided to the observers in the research lesson) and it is the key point of reference for the post lesson discussion.

Explain to your pupils that you are trying to improve the way you help them to learn and that is why there are three teachers observing, making notes and talking to some people after the lesson. Explain that you will share with them what you are finding out and get their views.

Take real care over the joint assessment of the stages which the three case pupils are working at. You can make reference to the Assessing Pupil Progress materials. It is really important that the group clearly writes what they want each pupil to be able to do in the focus strand by the end of the lesson and what they will be looking for as evidence of this.

Because the research lesson is jointly planned, it is jointly *owned* by the group. This means the focus for the observers is less on the teacher and more on the learners – especially on the case pupils. Observers should alternate, spending some time as if 'zoomed-in' on a case pupil but then also 'pan-out' to allow a bigger group or the whole class to come into their observation frameframe at other times.

Observers should try to capture the case pupils' responses at different points in the lesson – and how these match or differ from what the RLS group predicted at that stage. Note also any critical incidents. If there is a common pattern (e.g. all case pupils misunderstand something in the same way) note it in the right hand column.

Note the time against each annotation if you can.

At the conclusion, look for the evidence of progress for each pupil against what was planned and the extent to which they are achieved. What are key points for the next lesson for the case pupils, their groups or the class? What might you want to ask them in their post lesson interview? Jot this down in 'initial thoughts' at the bottom of the page.

Notes

In order to optimise the opportunities for your lesson study group to use 'exploratory talk' to aid 'interthinking' you should use 'ground rules for talk' (Mercer 2010) such as that set out on page 17.This governs the post-lesson discussion and requires an analysis of the predicted and actual learning of each case pupil to be the structure of the discussion.

When you get into that exploratory talk and the 'meaning oriented' learning it generates amongst the group as you hypothesise about what might have worked more effectively at particular points, you actually begin to plan key aspects of the next research lesson.

Research lesson planning, observation and discussion sheet Subject, Learning Focus Teacher/observer

Precisely what is this research lesson aiming to teach? (it may be a section of a longer teaching sequence) *By the end of this lesson pupils will be able to …… and we will know this when …*

What learning or teaching technique is the research lesson aiming to develop? *We are hoping to improve…*

Current attainment and success criteria Describe what you are looking for from them by end of lesson in the identified aspect	Case pupil A ……. **Success criterion for this focus**		Case pupil B ……. **Success criterion for this focus**		Case pupil C ……. **Success criterion for this focus**		
Stage of lesson sequence	How you predict case pupil(s) A will respond	*How they are observed to respond*	How you predict case pupil(s) B will respond	*How they are observed to respond*	How you predict case pupil(s) C will respond	*How they are observed to respond*	Patterns / issues
Stage … (approximate time)							
Stage … (approximate time)							
Final stage … (approximate time)							
What were they able to do? (What progress have they made and how do you know?)							
Initial thoughts							

f. Interviewing pupils after lesson

...they [pupils] begin to take ownership of the whole learning process, they take responsibility for it and also they're helped. It's amazing because ... they're engaging with us, in helping us to help them to learn. Incredible stuff really, incredible stuff!'

What works

Research Lesson Study groups often interview a group of pupils – which can include the case pupils - after the research lesson to gain their perspectives on what worked for them, what they felt they learned and how they think lesson could be changed if it were taught again to another class in order to make it work even better.

The interview should be short (no more than 5 minutes) and can be done with all the case pupils in a group or individually.

Try to conduct the post lesson pupil interview at the first opportunity – ideally at the end of the lesson.

Try to capture some of their exact words in your notes.

Some people conduct the post research lesson pupil interview with other pupils but who are in the same three learner groups as the case pupils. This can help triangulate findings – but it can also complicate the data set.

Notes

Figure 4. Examples of question prompts for a post lesson interview with the pupils

What did you enjoy most about that lesson?

What did you learn? (What can you do now that you could not do. What can you do better? How is it better?)

What aspect of the teaching worked best for you?

If the same lesson is being taught to another group what would you change. Why would you change that aspect?

As you get more experienced in lesson study you will want to tailore these to fit the research lesson, the pupils and the focus of the lesson study you are conducting.

g. The post research lesson discussion

'....it's amazing how much you learn by explicating your ideas, so in challenging me, I have to justify why I think we should do this in this particular way and through that it really strengthens your own knowledge and gets you to a place you could not get on your own'

What works

Come together as soon as you can after the Research Lesson (and certainly not later than 24 hours afterwards). You may wish to review the following qualities of a successful post Research Lesson discussion.

(a) Openness to critical viewpoints and suggestions

(b) Fidelity to observed data and no excusing failure

(c) Viewing the post lesson discussion as a joint learning opportunity

(d) Clear goals and questions from the plan/observation sheet

(e) A designated 'moderator' for the discussion (a chair who can lead the discussion positively,) a role that can be combined with that of

(f) 'Adviser,' (final commentator) whose role it is to capture the learning distilled from the discussion, in order that it can be acted upon by the group and others beyond the group. This person may be external to the school and an expert in the curriculum area involved. (Takahashi, 2005).

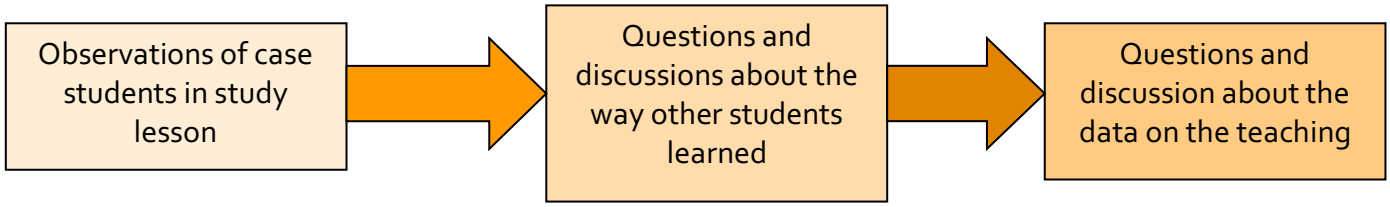
The most important thing to remember though is that the flow of analysis needs to start with the observations made of the case pupils' (and other pupils') learning before it addresses the teaching (See Fig 3 below). This preserves the focus on pupil learning and only on teacher learning that arises from this and reduces the tendency for lesson observation discussions to become feedback on teaching (which teachers can feel is judgmental in nature and not conducive to teacher learning (See Fig 3 overleaf).

Sign and date the record.

Keep the notes in a professional learning log in the staffroom.

Notes

Figure 5. Ground Rules for talk in the Post Research Lesson Discussion



(Dudley, P., 2012)

The exemplar record below can be used to capture the post lesson discussion:

Post Lesson Discussion record			
	Case pupil A	**Case pupil B**	**Case pupil C**
What progress did each pupil make? Was this enough? What about others in the group of learners they typify?			
How did the curricular or pedagogical approach being developed help or hinder? (Maybe a bit of both) What surprises were there?			

What aspect(s) of the lesson should be adjusted next time to improve the progress of each	• • •
So what should we try next time?	• • •

Initials ..... Date .....

Overall assessment record of progress in a Lesson Study

The form below can be used to summarise the progress case pupils and other pupils make across the three lesson studies in relation to the success criteria you had agreed for them in each of the three research lessons.
Total number of pupils in class .....

Pupil(s) Total number of pupils in the class	**Met success criteria**	**Exceeded success criteria**	**Will need follow up help or re teaching**
RL1			
Case pupil A			
Case pupil B			
Case pupil C			
Number in class who we expected to have..			
Number in class who actually..			
RL2			
Case pupil A			
Case pupil B			
Case pupil C			
Number in class who we expected to have..			
Number in class who actually..			
RL3			
Case pupil A			
Case pupil B			
Case pupil C			
Number in class who we expected to have..			
Number in class who actually..			

h. Formally sharing the outcomes or your Lesson Study with other professionals

'Because the typical sort of teacher is extremely busy, they want to see that what you're putting forward is going to be of use to them and so little snippets, with a video is really helpful for that..'

What works

At the outset, try to arrange an opportunity for the group to share with colleagues what they have done, learned and refined once they have completed their Lesson Study, especially in the key curricular or pedagogical approach being developed. If people know in advance that they will have to share their findings with others, then they will bear this in mind throughout the proceedings. This helps the Lesson Study group to keep their thinking and their findings clear, more useable and replicable by others.

Video snips of the research lessons and digital photos embedded in PowerPoint presentations are a popular way of conveying lesson practice and processes. (You will need to ensure you have a school policy on use of video and photos in place).

Arrange opportunities for members of the Lesson Study group to work with other teachers in order to help coach the pedagogic technique they have evolved, adapted or refined.

Remember that articulating and explaining practice and making it visible to others:

(a) helps those learning from their peers improve their practice
(b) improves the performance of the person doing the explaining or coaching.

This is because it makes visible what is often tacit knowledge of practice - which teachers use but never express. Articulating this helps them become more aware of their knowledge themselves and therefore more able to improve it further.

Celebrate and value what has been learned and shared.

Create a 'learning wall' in the staff room where a Lesson Study group can display their work – photos, notes, observations, discussion outcomes, pupil interviews and tentative conclusions. This creates lots of staffroom talk about professional learning long after the formal sharing is over.

Notes

i. School leadership: championing Lesson Study and building it into school systems

'...what I've been surprised and really pleased about I think is that people who normally close the door and get on with what they do in a lesson, have suddenly thought 'Oh hang on, this is good for me, within my lesson. It's good for the kids within my lesson, it's practical, I'm doing something. And they've really got on board. And that's been remarkable in our place.'

What works

Lesson Study is very good value for money if you genuinely create opportunities for its outcomes to feed into the practices of those involved in the study and others in the school. Heads in schools that have 'plumbed' RLS into the school's day to day systems and processes say it delivers more improvement for less cost and that it oincreases capacity for further improvement.
Some heads allocate dedicated professional learning time when Lesson Study groups plan and analyse their lessons, which is created from time normally allocated to professional development or management processes.

Judicious use of PPA time, specialist teaching time, staggered timetables or break times and any other means which allow some teachers to be free to talk together, can create opportunities for planning or for post lesson discussions which do not always demand supply cover.

Myths about the cost of Lesson Study

Lesson Study is not expensive. Figure 4 below shows the bottom line demands on classroom cover of a 3 x research lesson (RL) Lesson Study such as that outlined in Figure 1 (P. 5).

Table 1. Classroom cover demands of one Lesson Study X = Classroom cover required	T1	T2	T3
Initial planning meeting			
Planning RL 1.			
Teaching RL 1.		X	X
RL1 post lesson discussion and planning RL2			
Teaching RL2		X	X
RL2 post lesson discussion and planning RL3			
Teaching RL3.		X	X
RL3 post lesson discussion			
Creating poster or report of Lesson Study			
Sharing knowledge with others			

Notes

Table 1 above shows that where directed time (other than teaching time) is used to carry out planning, analysis, writing-up and knowledge sharing elements of a typical 3 x teacher, three x RL Lesson Study, the net classroom cover demands total six lessons.

Remember that this Lesson Study has provided focused and impactful professional learning for three teachers and that other teachers will also learn and benefit from it. But it has demanded the same classroom cover as sending only two teachers on whole day courses.

Ten times the impact on practice and pupil learning for two thirds of the cost seems like good value. In fact in a large scale survey in 2010 nearly all teachers and head teachers said they felt collaborative classroom enquiry is good value for money. However only around 2% of teachers reported experiencing it (Pedder and Opfer, 2012).

So if being slaves to the tyranny of the timetable and the staffing matrix means we are not enabling our teaching force to learn and develop, then we need to find ways of creating the time and space for these lesson studies to take place and we need to convince parents and governors that this is ultimately beneficial for children. It may be useful to brief parents beforehand if you are using LS for the first time. In Japan schools publish yearbooks of their lesson studies to parents, demonstrating the improvements these have created for their children and for future children in the school.

Build LS into your policies so that it becomes a route operating procedure.

Heads of department can build Lesson Study into their school teaching and learning policy by creating a staff professional learning policy. These give teachers and others entitlement to professional learning and CPD opportunities which include the models now recognised as having most impact on classroom practice. (See page 3).

It is important to keep Lesson Study separate from performance monitoring.
One example where Lesson Study was successfully aligned with but kept separate from performance management was achieved by treating participation in Lesson Study and sharing of the outcomes with colleagues - as an important adjunct of performance management. No performance judgements were made of the Lesson Study, but it was shared publically with other teachers. Staff involved felt that with Lesson Study they had addressed and improved areas in which they felt less confident rather than *playing it safe* in an area of relative teaching strength which often happens in a performance management observed lesson.

Notes

Sharing the practice knowledge you develop in a Lesson Study

Some Lesson Study groups demonstrate the techniques they develop to other teachers in an open house research lesson. Here the lesson is taught with a number of invited observers. A lively discussion can follow including pupils as well as adults. Where a Lesson Study unearths some very important practice knowledge a school may open the event up to invited guests from other schools, universities, local authorities or MAT trustees. and teach it after school as a 'public research lesson'. In Japan such events will often be attended by a local invited expert in the curricular area of focus. S/he will share views on the lesson and give those assembled insights and ideas for further development.

In the UK there are examples of such public teaching but it is still most common for teachers to share their lesson studies with their colleagues in the form of presentations which may contain snippets of videos from the research lessons or of pupils describing the impact on their learning. Some schools are now developing the use of posters to record and present their lesson studies.

Notes

j. Using LS coaches or 'knowledgeable others' to support and develop the professional learning from Lesson Study and using the Lesson Study model as a platform for cross-departmental or school to school coaching

What works

Expert practitioners or consultants can support the Lesson Study process. They can:

- Demonstrate a technique in the school immediately to other teachers prior to a Lesson Study cycle beginning.
- Join a Lesson Study group as they plan a research lesson and contribute ideas and suggestions.
- Sit with a Lesson Study group and discuss the research lesson they have prepared – contributing to suggestions about how the pedagogic technique could be developed.
- Join a research lesson as an observer (with equal status) and participate in the post lesson pupil interview and discussion.

'Knowledgeable others' as they are called in Japan play an important role in facilitating lesson studies in this way and cross-fertilizing ideas and developments from school to school.

Notes

Subject leaders can play a similar role – especially if they have participated in a Lesson Study cycle themselves and become a champion in school.

In England there is growing interest, particularly from Teaching Schools and other collaborative school groups, in using Lesson Study for sharing and developing improvements in learning across and between schools.

Additional interest and value can be created around Lesson Study if it is used by teachers to develop a portfolio to evidence particular teaching standards or to contribute towards professional or academic qualifications, research or other forms of professional recognition.

When your teachers have developed some practice which has had a clear impact on learning and progress of pupils and in which you think others would be interested in – log the practice as a case-led study at:

www.lessonstudy.co.uk

This is a website designed to help practitioners search for and share practice in classrooms and school improvement which have worked in one place and could work elsewhere.

The global spread of Lesson Study

At the beginning of the 21st centrury LS was practiced in Japan, China and had recently been taken up in the US. It is now practiced in over 80 countries worldwide. RLS has been practiced in the UK since 2001 has been used in many European countries, the Middle East, South East and Central Asia. RLS is used in all 7000 state schools in Kazakhstan. This booklet has so far been translated into eight languages.
Lesson Study has been adopted as the default method of teacher learning by national programmes such as Every Child Counts and Every Child a Reader.

Notes

So, share your lesson studies and see those of others at:

For more information about UK LS developments join:
www.lessonstudy.co.uk

For information about Lesson Study around the world join the World Association of Lesson Studies (WALS) at:
www.walsnet.org

For research papers and lesson studies published internationally go to:
http://www.emeraldinsight.com/products/journals/journals.htm?id=ijlls

k. Notes on Research Lesson Study

The following paragraphs are taken from a paper presented at the World Education Research Association Annual Conference in Tokyo 2019.

Theoretical underpinning of RLS

RLS utilises socio-cultural learning theory and deliberately optimised opportunities for professional dialogue and talk in these processes. The teachers in the pilot study (Dudley, 2013) devised protocols in order to ensure people felt safe to contribute in these discussions. In panel 1 below, is a version of the protocol originally drawn up during the pilot to set the *ground rules for talk* of the LS group.

RLS draws in particular on the work of Mercer (1995) in helping to engineer these discussions. IDudley (2013) analysed the talk of teachers in lesson study groups as they analysed curricular demands or planned and analysed student learning in research lessons and established that in contexts of RLS teachers use 'exploratory talk' to create 'inter-mental zones' within which they built a shared working model of their next research lesson (Dudley, 2013) through a process of 'interthinking' (Mercer, 2000).

In addition, he found that during these discussions teachers experienced '*learning points'* when they shifted their beliefs about the veracity of an approach trialled in a research lesson and reformulated their pedagogical content knowledge accordingly. They often needed to experience a number of related learning points before consciously adopting a new position or belief in relation to the teaching and learning in question. These learning points almost invariably occurred during sequences of exploratory talk. They occurred most frequently when, during a sequence of exploratory talk, the LS group was engaged in *hypothesising* about how and why something had succeeded in supporting the learning for a student or why it had not. They occurred with the second highest frequency when teachers were engaged in oral 'rehearsal' of aspects of the lesson which I shall come to later.

A further similar study conducted across 22 schools over two years concluded that in RLS groups teacher dialogues promoted 'meaning oriented teacher learning' (Vermunt, Vrikki, Warwick and Mercer 2017; Dudley, Xu, Vermunt and Lang, 2019b).

> In "meaning-oriented" teacher learning, teachers' focus is not only on learning about "what works", but also on "why and how things work". Teachers adopting this way of learning compare different students' work, think about how different lessons relate to each other, monitor pupils' progress, experiment with new ways of teaching and try to understand how students learn and reflect on their own teaching practices. It is a high-quality, deep mode of teacher learning. Features of Research Lesson Study that may explain its impact on this form of teacher learning may include: Research Lesson Study's strong focus on understanding case pupils' learning; searching-out explanations for pupils' misunderstandings; the high degree of ownership that teachers feel they have over their own learning; and a simultaneous focus on subject knowledge, teaching, and pupils' learning. (Dudley et al. 2019b p 213).

The proportion of meaning oriented learning identified in RLS groups is greater than that seen in other forms of teacher learning.

Mercer (1995) found that the propensity for 'exploratory talk' to promote the creation of knowledge is significantly boosted by the use of 'ground rules for talk' (such as those evident in the RLS group talk protocol above). Other ground rules for talk used in the RLS process include a *post research lesson discussion protocol* which guides teachers to discuss the observed learning of case students (see following paragraph) and then of other students in the research lesson (RL) before raising hypotheses or drawing conclusions about the teaching. This is important not only in engineering evidence-rooted discussion and meaning oriented teacher learning, it is important also because it keeps the focus of the discussion away from the teacher and so protects the 'safe space' of the LS group.

Case students

An important element of kyouzi kenkyu in RLS concerns the identification of around three 'case students' prior to commencement of the lesson study. These students may be representatives of different learner groups in the class. If the aim of that lesson is to develop a new approach, for example, to introducing the mathematical concept of 'ratio' to eight year olds, then the case students may represent (i) students whom the teachers expect to find this easy, (ii) those they believe may require additional support and further teaching, and (iii) those students who fall into the group in the middle. If, however, the lesson study is focusing on a particular learner group that is struggling in a curriculum area, then the case students will be chosen from that group. The lesson group will design the research lesson with these students in mind. When they reach a point in the lesson plan where they will be waiting in the lesson for students to complete a task before moving on to the next stage of the lesson, they must agree and record on their plan what they predict each case student will need to have said, written, drawn or otherwise, to signify to them that she or he is ready to move on to the next phase of the lesson.

This 'ground rule' often exposes considerable differences between the expectations of the members of the LS group in relation to the predicted student behaviour and frequently also in relation to the precise nature of the object of learning (OL) revealed in detail through the need to jointly formulate these success criteria for each case student. During the post research discussion of the case students described above, LS groups compare their earlier joint predictions with what each case student was actually observed doing and they attempt to explain any differences. This conversation strongly promotes meaning oriented teacher learning as they compare their evidence and try to make sense of why a student did or did not learn as

anticipated, as well of course, as what the LS group could have done differently or should try doing in the future in order to help the child overcome a barrier to success. They also discuss the observed learning of other students in the class and of the class as a whole and they often discover other students in the class (or realise that there are students in other classes) with similar learning issues who they feel they may now be able to help in the same way.

What is very interesting in relation to case students is that despite knowing these students well, an RLS group will nearly always discover important new knowledge about their case students' learning or levels of operation that they had previously thought to be quite different. This of course means their assessment of the student is dramatically changed and subsequent teaching can quickly be adjusted for them.

Sequences of three research lessons

These discoveries about students tend to occur in the *first* RL. There is therefore a frequent need to re-run a revised version of the first RL in the light of this new-found knowledge about the students giving rise to a second and frequently a third RL so that further cycles of lesson design can take place and be studied.

The RLS model therefore allows for three research lesson cycles. The first is often used for 'reconnaissance' purposes – to better understand the learning issues and the students. The second RL will retest the design but with a better match to students' cognitive needs while a third RL creates an opportunity to test or to re-test hypotheses constructed in the first two and frequently to re-motivate and engage students who have experienced difficulties.

Eliciting and harnessing tacit practice knowledge

The anticipation of a further opportunity to readjust their teaching in a subsequent RL gives rise to one of the most important features of RLS, which is the elicitation and harnessing of teachers' tacit knowledge. Evidence from RL planning and post-lesson discussions of RLS groups reveals that when jointly negotiating their predicted student responses or when jointly constructing the imagined (or re-imagined) RL, members of the LS group frequently 'go into role' as teachers. Using their 'teacher voice,' they orally rehearse different forms of words and phrasing with which to ask the students a question or to explain an activity. LS groups will often 'code switch' between their teacher voices and their LS group voices for extended discourse sequences until they feel they have found the right way to say something in the forthcoming research lesson (Dudley, 2013). These interactions are frequently in relation to the affective domain – engineering confidence in students that they should re-open negotiations of meaning that have previously failed. 'Rehearsal' is thus a complex, joint, imagined dialogical process in which teachers anticipate the possible barriers to motivation or engagement and find forms of words that will engineer confidence and a willingness to try. For example, instead of asking students what the correct answer to a mathematical problem will be, the teachers in the LS group from which the following quotation is drawn, decided instead to ask the pupils 'What will happen next'.

> *''What will happen?' (said in role using her teacher voice to allow the effect of the words on the pupils to be jointly imagined by the LS group).*
> *'Yes it opens it up a bit doesn't it!' (Dudley, 2013).*

This is an important characteristic because so much of teachers' practice knowledge is tacit (Eraut, 2004) making it almost impossible to be conscious of and therefore hard to critique and improve. Tacit knowledge is invisible and beyond conscious recall. It comes to us when we need it (like riding a bicycle) but the more we attempt to summon it *consciously*, the more it recedes from us. Tacit knowledge can however be elicited subconsciously in the context of small group discussions where trust, social capital and shared endeavour are all high. Tacit knowledge can also be highly generative of innovation.

RLS groups forge tight-knit bonds in their safe space that create the necessary conditions for such tacit knowledge exchange.

In theoretical terms, I argue that this RLS group-learning context creates a form of expanded Zone of Proximal Development. The interleaved, recursive, deliberate processes of collective imagining and predicting student learning, combine dialogically to stimulate teachers' interthinking that both elicits and harnesses tacit as well as conscious knowledge, allowing these forms to combine and thus become retrievable. This theoretical model casts light on the 'combination' step in Nonaka et al.'s (2002) influential (but in places rather 'black box-like') SECI model of tacit and explicate knowledge management. The *ground rules for talk* of the LS group protocol (See page 7) guarantee the trust and social capital generated in the SECI model by the invocation of 'Ba' conditions by Nonaka et al.'s professionals.

Shared endeavour: building teacher learning communities at school level and more widely

The experience of planning and conducting multiple research lessons in such tight-knit groups, drawing upon each other's experience and knowledge, disclosing vulnerabilities and uncertainties – sometimes even lack of personal skill or knowledge – brings these RLS group members together. Experiencing how the work they do through their lesson studies is breaking down students' barriers to learning and helping their students to succeed, forges a strong sense of *shared endeavour*. RLS groups tend to be increasingly keen to share what went wrong as well as what succeeded and are proud to admit publicly that they have gained important pedagogical or subject knowledge that they had (often unknowingly) lacked beforehand. They frequently state that because the research lessons were jointly planned and executed, no one person feels vulnerable to criticism, and because research lessons are experimental and enquiring in nature, they become rich opportunities for professional learning (unlike the performance management lesson observations described above).

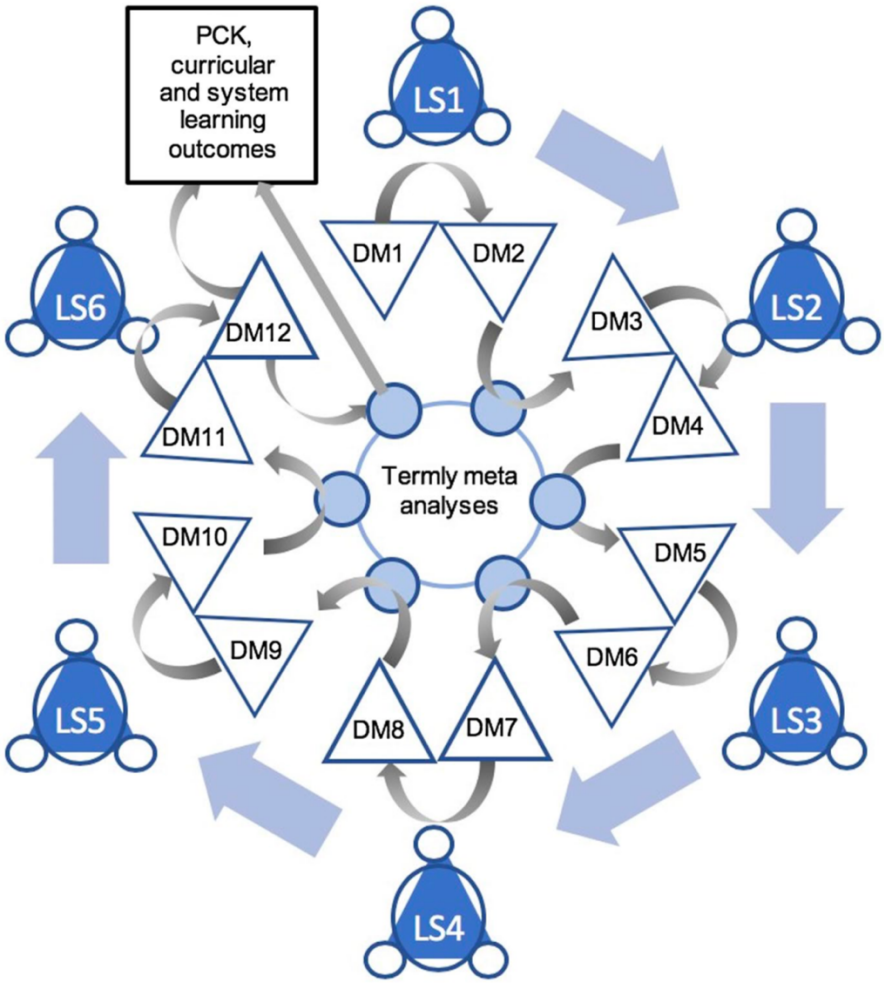
The power of this is illustrated in the account of how around sixty schools voluntarily formed and organised three RLS hubs following the end of a funded RLS research project involving 96 schools in London (Dudley, Xu, Vermunt and Lang 2019b). These self-sustaining hubs met six times a year for over two plus years, planning and sharing their lesson studies. One of the districts involved in the project went on to incorporate its school-to-school improvement and professional development work, forming a not-for-profit school improvement company encompassing 60 member schools who work together, supporting each-others' development and improvement and for whom classroom enquiry is an essential component (Dudley et al. (2019a).

This power of lesson study to build learning community strongly echoes the work of Professor Manabu Sato's Asia Pacific 'School as Learning Community' movement (Sato, 2010).

District level RLS

These voluntary hubs formed local system-led models. These are seen where a group of schools in a locality or district with a common development focus work together, often with the support of local experts, to develop shared knowledge through parallel lesson studies. This approach mirrors the district level dimension of Chinese Lesson Study. Figure 3 below sets out the termly process of collective 'kyouzai kenkyu', school based research lessons and collective sharing of lesson studies. The knowledge gained from these processes is enhanced by an inter-termly process of cross-case analysis conducted by the district and / or university team which further informs the next term's design processes.

Figure 2: Six term (two year) cycle of district level lesson studies, district meetings and termly meta-analyses that engendered the continued work of voluntary, self-organised, self funding RLS hubs in London for a further two years.



(Dudley, Xu, Vermunt and Lang. 2019. P. 207)

Building and managing expert knowledge

As stated above, this model involves local expert practitioners at both the planning and presentational stages of the RLS process. Local experts are sometimes invited to 'open house' lesson study events. The aim in the above project was to build local expertise and capacity to support quality lesson study through concurrent involvement of practitioners and experts at classroom, school and at system levels in order to support curriculum development. Later I will discuss management of expertise and the development of expert knowledge in RLS and in LS in the UK.

Post RL Student interviews

As stated above, a further distinguishing feature of RLS is the interviewing of a selection of students by members of the RLS teacher group immediately after each RL.

This element was introduced early in the development of RLS as a result of compelling research by Ruddock (1996), McIntyre, Pedder and Ruddock (2005) and others, revealing the benefits for students, teachers and schools of giving students greater voice and agency in their learning and schooling. The 'ground rules' for these discussions suggest that interviewers ask the students to imagine the teachers are to conduct the research lesson again the following day for a similar class of students and to advise their teachers what might be changed and why (Dudley 2014). A discussion usually ensues which is both revealing to the LS group about aspects of their RL and which is also formative and of practical use. Practice has developed in some schools to further involve these students in helping to plan and evaluate subsequent research lessons. A recent study of the effects of these pupil interviews in RLS concluded that pupil input provides a challenge for teachers in considering their interpretations of pupil learning, evaluating lessons and planning, and in thus contributing to teacher learning from RLS. (Warwick, Vrikki, Færøyvik Karlsen, Dudley & Vermunt (2019).

Figure 3. The whole Research Lesson Study (RLS) model

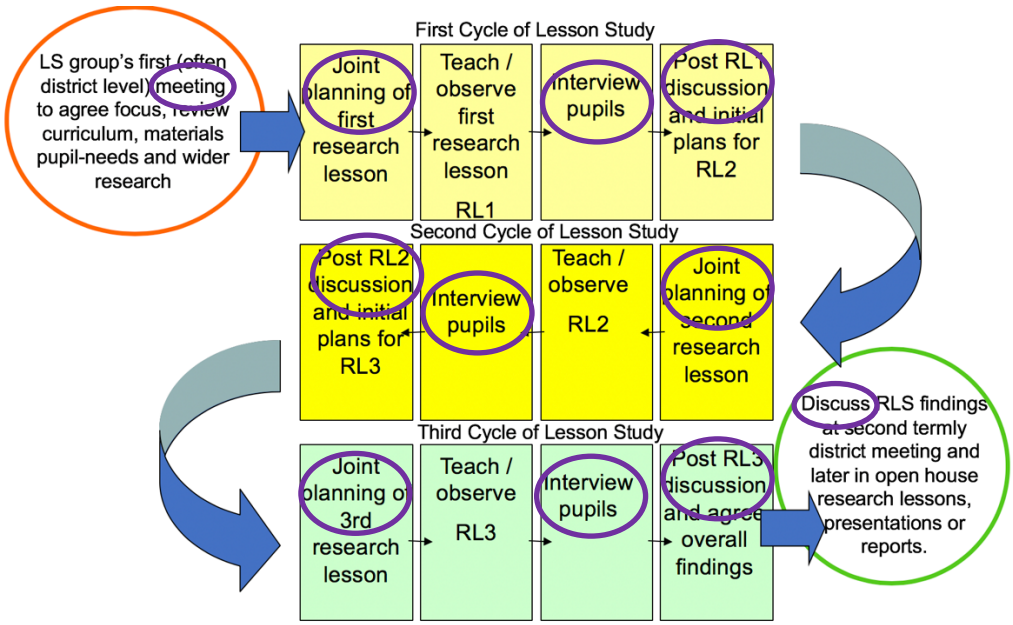


Figure 3 (above) illustrates the RLS model and how it builds knowledge over up to three research lesson cycles informed by joint RLS planning meetings, post lesson discussions and by wider peer discussions at termly district level planning and sharing meetings. The purple ellipses illustrate the many points through which this deliberate process is interleaved dialogically with opportunities for teachers to engage in exploratory talk and interthinking.

Impact of RLS

RLS has been used in up to 20% of schools in England. It was first put to a large scale test in 2008-9 when it was used with 900 'coasting' schools in a National Strategies intervention where 'leading teachers' used RLS in around half the schools to help improve pupil learning in mathematics and English, while more traditional methods of demonstration and modelling were used in the remaining schools. Results of national tests revealed greater gains were made in the RLS schools in both years (Hadfield et al. 2011). RLS was subsequently trialled as part of an 800-school government funded study to evaluate curricular or pedagogical approaches that might help to narrow attainment gaps for underperforming learner groups. RLS

was one of only two approaches to be recommended for further development (Churches, 2016). Another 280 school randomised trial used RLS for teacher development as part of a multiple intervention to evaluate a package of pedagogical and curricular approaches to raising attainment in English and mathematics. Teachers and schools valued the process but no overall effect size was found (Murphy et al. 2017). However, the study also reported that 35%-40% of the 'control' schools had reported that they had in fact conducted RLS. This could have accounted for the lack of an effect size in the treatment group.

Finally, a study was conducted of differences in the learning outcomes teachers predicted for their students if taught as usual (without any lesson study) compared with their assessments of these pupils' progress following RLS. This was based on data from 252 research lessons in mathematics and English and reported an average:

- 18% reduction in the number of students needing additional help following teaching;
- an increase of 11% in the number achieving the intended learning outcomes and of 7% in those exceeding expectations

– all of which were statistically significant (Dudley et al. 2019b).

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