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Center for Excellence in Teaching and learning

Learning Toolkit

Lesson Study

- What is the research evidence for professional learning models like Lesson Study?
- What is Lesson Study good at improving?
- Use of Lesson Study as a tool to improve student learning and faculty teaching
- Passing on knowledge developed in Lesson Studies in order to improve the practice of others

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Date: September 2011

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Introduction

We are pleased to make available to the university community this toolkit on "Lesson Study". "Lesson Study" is recognized as a form of "Action Research" methodology in the field of education. It is based on a Japanese tradition that perceives learning as a cooperative and sharing process. According to this tradition, a teacher plans, implements and analyses students' learning in specific classes through working with a group of colleagues who are fully engaged in this process.

This toolkit is developed as a result of the training workshop that was conducted in August 2011 at Bethlehem University. The workshop was facilitated by Dr Peter Dudley from Cambridge University- UK and attended by a number of faculty members.

We hope that this toolkit, and the following ones, will be useful resources for both students and academics at Bethlehem University. This toolkit presents practical guidance on how to use this methodology to achieve specific learning objectives. Please feel free to send us your comments on the quality of these resources. Your comments will guide the development and availing of such toolkits in future projects.

Finally, we hope that these resources will inspire interested faculty members to develop new resources that will be championed by the Center to help enrich the culture of sharing and learning that the university aims to encourage on campus.

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1. What is the research evidence for professional learning models like Lesson Study?

Lesson Study (LS) is a highly specified form of classroom action research that has been in use in Japan since the 1870s; therefore, LS pre-dates action research as we know it in the West, by some 70 years.

LS involves groups of teachers who collaboratively plan, teach, observe and analyse learning and teaching in 'research lessons'. They record their findings. Over a cycle of research lessons, they may innovate or refine a pedagogical approach which will be shared both through public research lessons, and publication of a paper outlining their work.

LS started to become popular in the west this century only, following the success of US researchers in developing deeper teacher knowledge of both pedagogy and subject among Japanese teachers which lead to high standards of Japanese students' academic achievement when compared with those of comparable groups of pupils in the US (Stigler and Hiebert, 1999; TIMSS., 1999).

In East Asia, LS is now in use in countries such as Singapore, Hong Kong, and China besides Japan. In the West, it is in use in countries including the US, the UK, Sweden and Canada. It has been developed mainly in school settings, but its use has now begun to extend successfully to Higher Education (Cerbin & Kopp, 2006).

What do we know about professional learning approaches that are most successful in changing teachers' practices?

Why is it that so many Western educational reforms aimed at improving teaching and student achievement have resulted in little change to teachers' practices? This is due to some good reasons – and some not so good ones as well. The latter reasons include:

- Many reform efforts concentrate on changing systems, structures and curriculum – but not on learning or teaching;
- The default context for teachers' professional learning in the West has been isolated from the classroom and learners;
- Where the focus has been classroom and observation based;
    - It is often linked to performance management, compliance or accountability; thus, it had been viewed as being more judgmental than developmental in nature;
    - It tended to focus on teachers' teaching rather than on students' learning.
    - The default model for teaching has been one of 'lone practice'.

I put these reasons in the 'not so good' category because they are the things that are easy to do something about. 'Good' reasons for the failure of so many initiatives lie in factors that are much harder to change.

Principal among these 'good' reasons is the role of tacit knowledge in teaching. Tacit knowledge is well documented; however, a bulk of teacher practice-knowledge exists only in tacit form because teaching rooms, full of students, are complex working environments. Monitoring the success of a lesson in bringing about learning in even a small group of students requires teachers to monitor many sets of indicators ranging from students' body language, peer conversations, responses (or non responses) to questions designed to elicit evidence that the student has grasped the concept or developed the skill being taught.

Often teachers find out about the extent to which students have been learning successfully in a lecture only when their work is marked after the event. Monitoring their evidence of learning is only the beginning. Successful teachers adjust their lessons according the feedback they are getting from their students as the lesson unfolds. They re-teach, intervene and adjust their teaching – not just at the level of different components or activities in a lesson, but right down to phrases and vocabulary that may help a student to conceptualise correctly – or reconceptualise a misconception.

Teachers consequently make hundreds of professional decisions each lesson (Wragg et al., 1996) in order to deal with student responses that were not anticipated when the lesson was planned. It is argued that a good teacher makes more professional decisions than other professionals. In order to enable themselves to recall a solution to a problem in an instant in a subsequent lesson, the teachers devise solutions that are stored in 'tacit' form. This is helpful because it does not require conscious thought in order to use it. It is as automatic as the knowledge we use when we are riding a bicycle. This means that there is a lot of working and the conscious memory available for teachers is devoted to dealing with the inevitable unpredicted events of any lesson. The downside of tacit knowledge however is that we cannot articulate it. It is invisible to us. Try describing exactly what it is that you do that stops you from falling off when you are riding a bicycle!!

Activity 1

1. Think about a typical student in a class that you are going to teach in the next couple of days; a student that immediately springs to mind when you think about that class.
2. List the aspects of this student's prior subject knowledge which you feel confident that you know about.
3. Then list those aspects of the student's subject knowledge about which you are ***less*** certain.
4. Now write a list of all the other students in the group that you can remember without having to look them up.
5. Repeat exercise in 1,2,& 3 above for the two students whose names you wrote down last of all.
6. Finally, discuss the differences between the list you made for the first student and the ones you made for the last two. What do these differences tell you about your knowledge of your students?

Tacit knowledge is why we teachers find it difficult to explain the details of our practice and why many of us profess certain values and practices, but we often do things that are out of step with them. It is not that we are hypocritical; it is simply that we are not aware of many of our actions because they stem from tacit knowledge.

Tacit knowledge may also account for why most teachers teach in the way they themselves were taught. It is because we developed tacit knowledge of our own teachers' practices. So while tacit knowledge allows teachers to teach, it restricts our abilities to describe, replicate and examine what we do, i.e. we often fail to learn from our practice.

Activity 2

Think about the kinds of professional learning that take place in the two common professional learning settings below.

1. Why do you think each setting has developed to be so different from the other?
2. What might be the implications for the kinds of knowledge that they tend to develop?

How does Lesson Study help to tackle the barriers to teacher professional learning?

Models of teacher learning that have the greatest impact on teachers' practice have the following characteristics in common, they:

- Take place over a period of time (a term) rather than during a short event.
- Focus on the learning of real students.
- Involve collaborative enquiry between teachers in an attempt to solve a problem or improve a particular approach to practice or student learning.
- Involve repeated opportunities to plan observe, evaluate and discuss student learning in close detail.
- Seek out and incorporate the perspectives of learners themselves.
- Expect that teacher learners find ways of passing on the knowledge they have gained in ways that enable other teachers to utilise this knowledge in their own practice.

(Cordingley et al., 2003, 2004; Pedder, 2005)

2. What is LS good at improving?

LS is very useful for improving teacher practice knowledge. Teacher practice knowledge can be summed up as a combination of teachers' knowledge of:

- subjects/curriculum they are teaching
- teaching or 'pedagogic methods they use to teach
- students and their learning needs.

A study of teacher learning in LS (Dudley, 2008) shows that teachers tend to develop all three and focus on a combination of the first two which Shulman (1986) calls 'pedagogical content knowledge'. It is the knowledge teachers need to have of a subject and of their students in order to be able to teach the subject. This includes knowledge of how the aspect of the subject being taught relates to prior learning in the subject itself and knowledge of the stage the pupils' prior learning has reached. In Japan, the teachers involved in LS connect the learning they are attempting to improve in their students with the overarching aims and values of the institution.

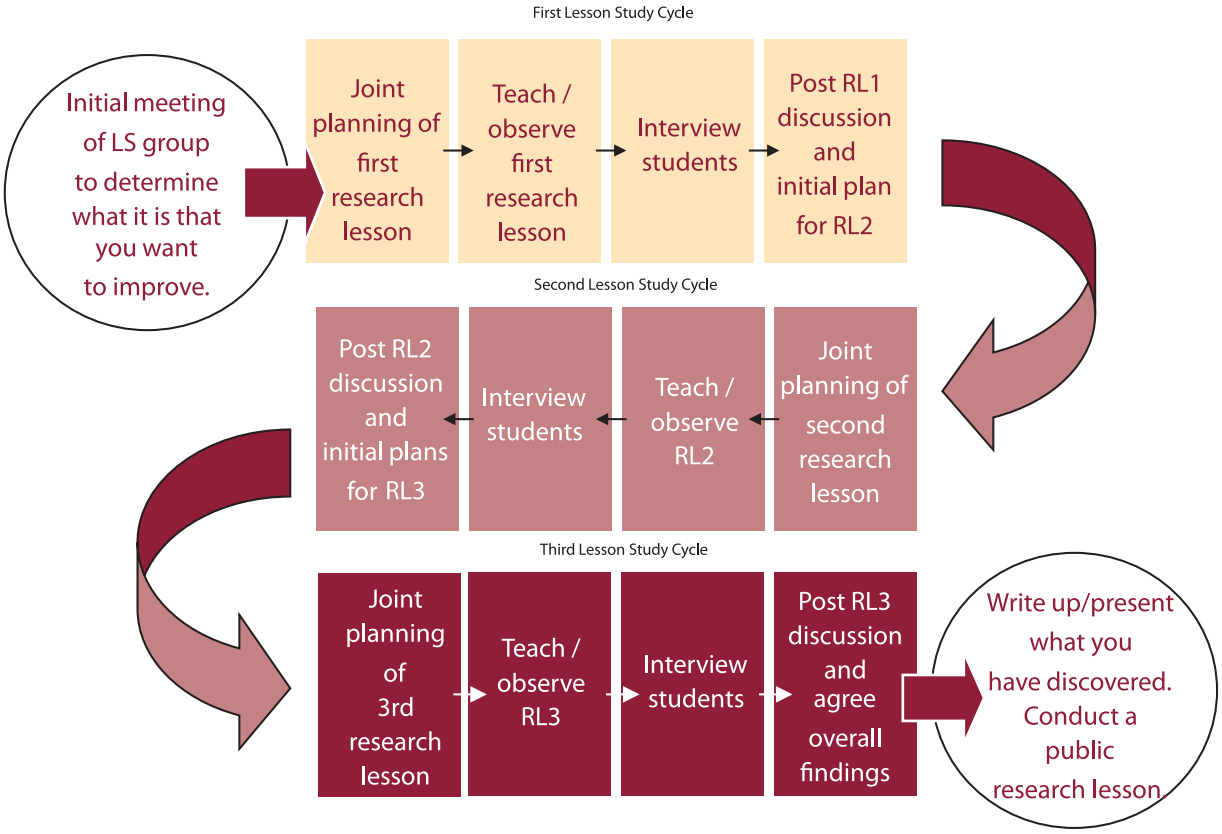
LS commonly involves students in the process to develop their awareness of themselves as learners on one hand and their independent learning skills on the other.

LS has been used with learners of all ages in settings ranging from pre-school to university. In the West, it has probably been used the most in the teaching of mathematics and language (including native language) lessons; nevertheless, there is evidence of its use right across the curriculum.

External evaluations in England give evidence that LS can dramatically improve teaching quality and, as a result, have a lasting impact on improved standards of student achievement (Hadfield et al., 2011).

A Lesson Study usually involves a cycle of three Research Lessons preceded by an initial meeting and followed up by opportunities to pass on the knowledge that has been developed in the LS as illustrated in Fig. 1 below.

Fig 1. The Lesson Study process



3. Using LS as a tool to improve student learning and faculty teaching

LS works best when it is woven into the fabric of the professional development policy and processes of the faculty and university. This section provides tools and templates that help you to:

- Establish a focus for your Lesson Study.
- Identify your case students.
- Plan, teach and analyse your Research Lessons.
- Involve your students in the process.
- Summarise the new practice knowledge that you have developed and pass it on to other teachers.

To start this process, it is useful for some groups of faculty to carry out a small number of lesson studies in areas of teaching and student learning; student feedback and academic performance are suggested areas where improved teaching would most benefit students' achievement.

Alternatively, maybe your data suggest that in some areas of faculty teaching, there are some groups of students who do not succeed as well as others.

When an area of focus has been agreed upon, you should identify a group of teachers to carry out a Lesson Study to address this area. You should agree on your LS research question. In LS, research questions nearly always have the same structure. For example, **How can we teach [aspect of curriculum] more successfully to [target student group]?**

The aspect of curriculum could be as focused as you like. It could be something you would normally teach in only one lecture or it could be something that is spread through a course or a unit of work. The target student group might be a whole course group where performance slips in the aspect of the curriculum on which you are focusing. Or it could be a specific group of students who fall behind in certain elements of the curriculum or subject because perhaps they are already not highly motivated by this aspect for whom there may be specific cultural or linguistic barriers that need to be overcome.

Researching the best approach to take

Before you begin to plan your research lessons, do some research into the kinds of pedagogical approaches that research suggests are worth following-up. During the life of the Centre for Excellence in Teaching and Learning, it is worth focusing on those 'high leverage' approaches that you have been following through the work of the centre such as 'assessment for learning' or "critical thinking". However, if you have a very specific example of curriculum that you want to teach more successfully then go ahead. For example, there are approaches to teaching phonology in English that can have dramatic effects on student reading and spelling that critical thinking would not address as successfully.

Identifying your case students

Case students form the key focus for the observations of student's learning upon which you make the Research Lessons. Remember – a teacher alone in a class is unlikely to be able to see more than 10% of all that goes on. People who have engaged in LS report that observing the behaviours of the case students helps them more fully to comprehend how their students are learning. They also report that by becoming more aware of the individual learning nature of these students, they become more aware of their other students as individual learners.

It is important, then, when choosing your case students, to select case students that will help you to answer your LS research question. Table 1 below helps you to use your research question to work out the kinds of case students you should identify.

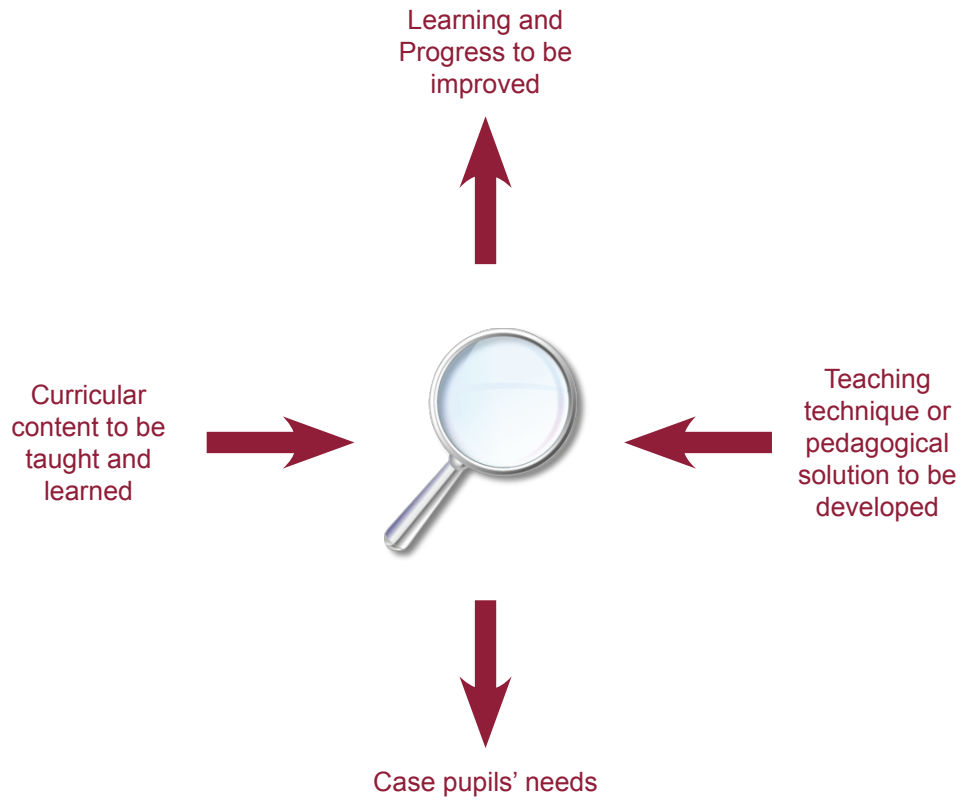
Table 1. Using your research question to identify your case students*

Example LS research question	Suggested group from which case students should be drawn
How can we teach [child psychology] more successfully to make sure that [all abilities of students] in our teaching groups are able to learn successfully and apply the ideas in their teaching plans for practicum?	Case students should be drawn from the ability range in the group and typify each range – perhaps one from the middle 15-20 students, one from the top 10 performing and one from the bottom 10 performing students in child psychology.
How can we teach aspects of physical science more successfully to female students in order that they remain as engaged and attain as highly as male students (who enter the course with similar levels of attainment but tend to outperform females by the end?	Case students should be drawn from female students with different levels engagement and attainment.
How can we find ways of teaching students with low levels of English more successfully so that they are willing to re-engage in learning English and see themselves potentially as competent English users despite years of failure in school?	Case student should be drawn from groups or subgroups of students who require intensive English teaching but who seem to have developed low levels of self esteem with English and systems for coping with failure.

**These examples are purely illustrative*

It is important to remember that case students are not only the focus for classroom observations but also they are interviewed and their opinions and views are elicited between Research Lesson.

Fig 2. Factors to consider when planning your Research Lessons



Adapted from 'Improving practice and progression through lesson study: a handbook for headteachers, leading teachers and subject leaders', National Strategies,' DCSF, London, 2008

Plan, teach and analyse your research lessons

As a group, plan your research lesson and pay special attention to what you want the class as a whole to get from the research lesson and what new technique or intervention you have decided to use in this Research Lesson in order to address your Lesson Study research question.

I suggest very strongly that for the first two or three research lessons you follow the Proforma provided below both to plan your research lesson and to act as your observation Proforma (once the lesson is planned) for observers to annotate during the Research Lesson. Try to plan what you hope your case students will be doing at different points during the lesson. The observers can then use these predications when they make their observations in the Research Lesson itself.

Try to plan the sections of the Research Lesson in detail so that you all get the chance as a group to try out new ideas and to rehearse how these ideas might work for the case students. It has been shown (Dudley, 2011) that opportunities to orally rehearse elements of the Research Lesson with the members of the LS group during planning can add to the quality of the Research Lesson and to the degree of teacher learning and the development of their knowledge because it can help members of the group to draw upon and discuss aspects of the stores of tacit knowledge that are usually so inaccessible.

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

What this study lesson is aiming to teach (it may be a section of a longer teaching sequence) **What is your LS research question?** ***How can we teach X more successfully to Y?***							
Current attainment and success criteria Describe what you are looking for from them by end of lesson in the identified aspect	Case student A …… **Success criterion for this student in this lesson**		Case student B …… **Success criterion for this student in this lesson**		Case student C …… **Success criterion for this student in this lesson**		
Stage of lesson	How you hope case student(s) A will respond	***How they are observed to respond in the RL***	How you hope case student(s) B will respond	***How they are observed to respond in the RL***	How you hope case student(s) C will respond	***How they are observed to respond in the RL***	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							

Activity – Drawing up a LS protocol

Rather than suggest a 'cut and paste' protocol, I am outlining here some of the key factors and issues that a LS group should discuss prior to beginning its work. This will require the group to engage in a discussion of the issues rather than passively agree on the suggested list without critical thought. Feel free to draw upon and use the suggestions below and even to add to them.

Many LS groups agree on a protocol which binds them and protects the research lesson as a space where it is safe to take risks, expose weaknesses that the group can work on for all to improve and where judgements about performance will not be make. The protocol might also want to specify that the LS group exists to create new professional knowledge for the benefit of students' learning at BU and for the benefit of staff teaching. It is therefore important that confidentiality of the LS group is respected while they are working and when the group has agreed that it has discovered an approach to teaching that is worth sharing with other members of staff or with colleagues beyond the university, then that is a professional obligation rather than an option.

Finally, your protocol might also involve a section that helps the group to deal with the role of students in the LS process. Many organisations decide to explain to students that they are using LS in order to try to improve teaching effectiveness and ask them to contribute by being observed and interviewed. There will inevitably be some research effect on the behaviours of students initially, but they swiftly get used to the increased number of adults in the room during the Research Lesson and value the opportunity to give their perspectives on what worked and what was less successful (see below).

There are no hard and fast rules about how many Research Lesson should be taught or whether you should stick with the same subject or the same teaching group – even (as some papers have suggested) that exactly the same lesson should be used each time. My advice is look at your LS research question and make your decisions based upon this, taking practical considerations into account.

(a) If your focus is on a strand of a subject that can be traced through two or three lessons then use those lessons

(b) If your focus is on a more generic skill that occurs frequently (such as student writing, self assessment, critical thinking etc) then you may want to use the same group or vary the group

(c) If your focus is on a teaching technique such as paired work, or collaborative problem solving, then you may want to use the same group for purposes of continuity and development or vary the group so that more teacher get to try out and develop the technique.

Teaching and observing the research lesson

When the lesson has been planned, it can be taught. It is usual for the teacher of the class for whom it has been designed to teach it while others observe, but you may adjust this in the light of (i), (ii) or (iii) above. The teacher should teach as normally a possible (except for the fact that a new technique is being tried out).

Observers should vary their time between focusing on the case students' learning and looking at the group more widely.

Some groups do use video in Research Lessons; however, my advice is to limit the use of video initially (if you use it at all) to just capturing those aspects of the student learning that the new technique is designed to address. Video can be time-consuming to analyse and can be regarded as the most important form of evidence of the Research Lesson there is. However, it is often the case that the square frame edits out much important information and that a snatched comment by a pupil or a glimpse of a student's learning captured by a teacher in an observation note tell the group more than all the video put together. So I am not saying don't use video – but I am saying use it with caution and probably do not use video in the first one or two research lessons that you do as LS is already a complicated process without the complexities that video evidence capture and analysis add.

Analysing the Research Lessons

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

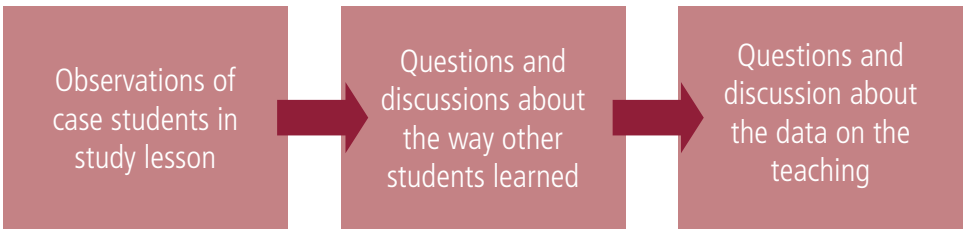
(d) Clear goals and questions from the plan/observation sheet

(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 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 (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 student learning and on teacher learning 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).

Fig 3. Post Research Lesson Discussion Flow



4. Passing on knowledge developed in Lesson Studies in order to improve the practice of others

It is important that once you have developed some new knowledge, you share it with colleagues. This is true even if the knowledge seems small and only applicable in the classes you worked with on your LS. It is likely that some of your colleagues will take on your suggestions and find ways of adapting them in their teaching. In fact the systematic passing on of new practice knowledge is a professional weakness for teachers when compared with other professionals.

You can pass on what you have learned through a PowerPoint presentation or though a paper, but if you really want to pass it on in a way which is likely to change practice, offer to coach colleagues in the teaching approach in their classrooms – perhaps using a LS method – or carry out a public research lesson. This last method is popular in Japan and involves inviting colleagues to watch a demonstration of the new technique with a real student group and to engage in discussion with the teacher and students afterwards. Although this is alien to tradition in many Western countries, it is beginning to occur as a means of practice transfer.

The Centre for Excellence in Teaching and Learning will support you in presenting your findings and your LS. It will also provide web based support through the intranet and face to face support via the teaching fellows.

Useful links and web resources

www.lessonstudy.co.uk

This website has links to a range of Lesson Study related publications, research papers, videos, tools and artefacts and is constantly being updated.

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APPENDIX 1

Lesson Study Report Proforma

Title of Lesson Study *(40 words)*

E.g. Using lesson study to develop teaching approaches that help students with learning difficulties and other students to understand key processes in photosynthesis and to devise a test to establish whether photosynthesis is taking place.

Who might find this case report useful? Give two suggestions (6 words each)

E.g. Science departments in Palestinian Universities.

Key points: Write two key bullet point messages to capture the attention of someone who may want to read this case study on the university intranet (12 words each)

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Names and usual roles and contact details of LS group members
Name and contact details of LS group expert member (if you are happy to be contacted)

Section A: Context and overall aims *(250 words)*

Write a brief paragraph describing your department describing important aspects of curriculum, teaching approaches and student learning (50). Describe how department's approach to ensuring that all students achieve well (50). Describe your LS group – strengths, experience, expertise, aspects people wanted to improve. (100)
Are there any charts or quotes from documents that would illustrate any of this.

Section B. Aims of the LS, class(es) and case students you worked with *(500 words)*

	What aspects of curriculum teaching were you trying to improve and what made you choose to focus on them? *What was your overall aim for this lesson study? Try and use this stem – 'We wanted to improve the way (xxxxx kinds of) students learn y'.* *Key research and materials you consulted and decided to use – anything you decided against.* *Describe each of your case students – their levels of operating in the subject(s) of the LS, their needs, the particular aspects of their learning and of themselves as learners that you focused upon.*

Section C: Your first research lesson (RL1) – planning, delivery, observations and analysis meeting *(300 words)*	
	What did you want the students to learn? *What teaching approach were you trying out this lesson?* *Who taught and what were the roles of others?* *What did you discover in your post lesson discussion about case student learning, class learning and issues for teaching?* *What did students reveal in interviews?* *What did you decide to do in RL2?* *Are there any quotes, extracts from student work or plans, discussions that would bring this to life for a reader?*
Section D: Your second research lesson (RL2) – planning, delivery, observations and analysis meeting *(300 words)*	
Write section 2 of your case report below using a maximum of 500 words	*What did you want the students to learn?* *What teaching approach were you trying out this lesson and how was it informed by RL1?* *Who taught and what were the roles of others (If different from RL1)* *What did you discover in your post lesson discussion about case student learning, class learning and issues for teaching?* *What did students reveal in interviews?* *What did you decide to do in RL3?* *Are there any quotes, extracts from student work or plans, discussions that would bring this to life for a reader?*
Section E: Your third research lesson (RL3) – planning, delivery, observations and analysis meeting *(300 wds)*	
	What did you want the students to learn? *What teaching approach were you trying out this lesson and how was it informed by RL2?* *Who taught and what were the roles of others (If different from RL2)* *What did you discover in your post lesson discussion about case student learning, class learning and issues for teaching?* *What did students reveal in interviews?* *What did you agree you had developed in terms of your practice and knowledge that you would record and tell others about?* *Are there any quotes, extracts from student work or plans, discussions that would bring this to life for a reader?*

Section F Impact on student learning and progress *(250 wds)*	
	How do you anticipate it changing learning and student progress in future. Be practical – students who xxxx. will be better able to learn yyyy because zzzz type statements. *Possible extrapolations onto longer term impact.* *Are there any quotes, extracts from student work or plans, discussions that would bring this to life for a reader?*
Section G Impact on practice and future teaching *(250 wds)*	
	How did you think it is going to affect your teaching, the teaching of others in future? *What decisions will your department or school make differently as a result of this LS?* *Are there any quotes, extracts from student work or plans, discussions that would bring this to life for a reader?*
Section H: Impact on departmental and school approaches to teaching, learning, supporting students with learning difficulties, and CPD. *(250 wds)*	
	Comment on this in a similar vein to G above. *Are there any quotes, extracts from student work or plans, discussions that would bring this to life for a reader?*
Section I: Personal reflections *(100 wds)*	