Pedagogy in Practice 2015, Vol. 1(2) 9-37 ISSN 2396-9326 (Online)

Seeing the same teaching and learning similarly or differently? Video-enhanced preservice teacher learning, professional vision, teacher evaluation and the Lesson Observation Online (Evidence Portfolio) Platform [LOOP].

Authors

David Cooper[a*], Shane N. Phillipson[b] and Sivanes Phillipson[b]

[a]*Institute of Education, The University of Wolverhampton, England.* [b]*Faculty of Education, Monash University, Melbourne, Victoria;*

Abstract

This paper reports on some small-scale research presented at the 1st CIDREE International Seminar on Professional vision in teacher video-enhanced education: Aims, means and issues at the French Institute of Education, ENS Lyon, France 16th – 18th March 2015. In our teacher education programmes at a university in the Midlands of England we use the concept of professional vision to encompass a number of processes. Firstly we study the visible teaching and learning captured by face-to-face lesson observations, as well as video-recordings of beginning teachers' teaching at the university in microteaching sessions and in their timetabled lessons at their 'clinical-placement' schools (Cooper, 2015). Secondly we study some aspects of the spoken dialogues/interactions captured by the audio-track recording of lessons that generates the transcripts of what beginning teachers and their pupils say in dialogue and interactions during lessons.

Thirdly we encourage our preservice teachers to pragmatically make use of the contemporary Department for Education [DfE] Teachers' Standards (DfE, 2012), Office for Standards in Education, Children's Services and Skills [OfStEd] 'Framework for school inspection' (OfStEd, 2015), 'School inspection handbook' (OfStEd, 2015a) and 'Supplementary subject-specific guidance for inspectors on making judgements during visits to schools' (OfStEd, 2014), as well as the Carter Review of Initial Teacher Training [ITT] recommendations (Carter, 2015). Preservice teachers work within these professional contexts to begin to develop clear, shared, consensus-understandings of what outstanding, good, 'requires improvement' and inadequate teaching visibly looks like and sounds like in reality via in-class, face-to-face observations/evaluations, and/or video-recordings of lessons (Cooper, 2015). Finally we have begun to research using the International Comparative Analysis of Learning and Teaching [ICALT] project lesson evaluation instrument to help preservice teachers develop clear, shared, consensus-understandings of what 'highly effective', 'high leverage' teaching practices visibly look like, in particular via video-recordings of lessons (TeachingWorks, 2015; Cohen, 2015, Best Foot Forward Project, 2015).

Professional Vision

The 'Carter Review of Initial Teacher Training [ITT]' in England (Carter, 2015, p.39) states "In order for school experiences to be as effective as possible, trainees need built-in opportunities to observe good and outstanding practice – they also need to understand the importance of observation and need to be taught how to observe effectively". It goes

* Corresponding author
Dr David Cooper , Senior Lecturer in Teacher Education, Institute of Education, Faculty of Education, Health and Wellbeing, The University of Wolverhampton, Walsall, West Midlands, WS1 3BD, United Kingdom, Telephone: 44 1902 322881, E-mail: d.cooper@wlv.ac.uk

on to say “Paired observation, for example, observation in partnership with a mentor, is one way to support this effectively. We have also seen examples where [ITT] providers and schools have used video effectively to teach trainees how to observe and analyse teaching and learning” (Carter, 2015, p.39, paragraph 2•4•4). According to Carter (2015, p.41) an important characteristic of effective mentoring, that is also key for new teachers when they self-evaluate, is “how to deconstruct and articulate their practice, how to coach and how to support and assess trainee teachers effectively”. In order for preservice teachers to become “skilled in deconstructing and explaining their practice” they need to develop what Schön (1983, 1987) has termed ‘reflection-*in*-action’ and ‘reflection-*on*-action’. In the former the preservice teacher tries to effectively use their professional situational judgement about their teaching and pupils’ learning ‘in-the-moment’ to positively impact on, and affect, the remainder of the lesson in ‘real-time’. When considering ‘reflection-*on*-action’ preservice teachers are now expected to “be explicitly taught how to reflect *on* practice, being able to analyse what has gone well and less well in a lesson. This involves teaching trainees how to effectively and analytically observe in the classroom” (Carter, 2015, p.28, paragraph 2•3•18, Cooper, 2014a).

In relation to “Defining effective ITT practice” about how teachers learn to teach Carter (2015, p.22, paragraph 2•2•4) notes “beginning teachers **need to observe** and **analyse their own** and others **teaching** with a continuous and increasingly refined focus on **pupil learning**” [the words in bold are those I have emphasised]. This is supported by Sahlberg et al (2014, p.11) in the context of initial teacher education in Northern Ireland (Carter, 2015, p.37). Clearly for beginning teachers ‘*to observe and analyse their own teaching*’ their lessons in the secondary schools where they would be training would need to be video-recorded.

A critical and particular form of pragmatic professional vision we are trying to develop in our ITT courses are trainees’ competences about understanding, for example, what an outstanding, or a good lesson visibly looks like from the perspective of the currently applicable Office for Standards in Education, Children’s Services and Skills [OfStEd] ‘Framework for school inspection’ (OfStEd, 2015), ‘School inspection handbook’ (OfStEd, 2015a) and ‘Supplementary subject-specific guidance for inspectors on

making judgements during visits to schools' (OfStEd, 2014). As Mitchell and Marin (2014, p.1) noted "The ability to notice important events in a teaching situation and make [positive, constructive, effective] decisions about those events is a key component of teaching well". For example, in terms of professional vision for beginning teachers of mathematics the most recently published grade descriptors about the quality of teaching in mathematics in 2014 were as indicated in appendix 1 (OfStEd, 2014). They are, in turn, related to the 2012 Department for Education [DfE] Teachers' Standards that apply to all teachers in England (DfE, 2012).

In our conceptualisation of 'professional vision' a pragmatic priority is therefore to help student-teachers to develop clear, shared, consensus-understandings of what outstanding, good, 'requires improvement' and inadequate teaching visibly looks like and sounds like in reality via in-class, face-to-face observations/evaluations, and/or video-recordings of lessons (Cooper, 2015). The expectation from OfStEd is that a school's Headteacher/Principal and its senior leadership team should be able to provide:

> evidence of the monitoring of teaching and learning and its link to teachers' performance management and the Teachers' Standards, but this should be the information that the school uses routinely and **not** additional evidence generated for inspection. (OfStEd, 2014a, p.2).

Reaching a widely-held, shared consensus about what the quality of teaching in lessons visibly looks and sounds like arguably then remains a top professional development priority for senior leadership teams in secondary schools in England. I have written a single A4 page briefing document of lesson content indicators for student-teachers and serving teachers about what 'Assessment for Learning' might visibly look, and sound, like in good/highly effective/outstanding/ambitious teaching of lessons (Cooper, 2014b).

According to Steffensky et al (2015, p.2) the various definitions of professional vision have two main processes in common – noticing and interpreting. "Noticing means the ability to pay attention to important events and to ignore aspects which are irrelevant for learning in the complex situation of classrooms that is characterized by multidimensionality, simultaneity, immediacy and unpredictability. … Those observed events must be interpreted in order to make sense of what is happening" Steffensky et al (2015, p.2). Writing about noticing and prospective teachers Mitchell and Marin (2014, p.2) note that "Sherin and van Es (2005) define 'noticing' as the ability to identify important events in a teaching situation, connect them to broader 'concepts and

principles of teaching and learning', and to use knowledge of one's 'specific teaching context to reason about a given situation' (p.477)".

A significant challenge in teaching preservice teachers about developing highly effective professional vision is, therefore, how best to go about it? A way we have begun to do this is by teaching trainees to analyse their lesson plans and lesson performances by analysing and evaluating the effectiveness of the content and structure of their lessons in terms of its impact on pupils' learning [we return to this later] (Cooper, 2014b). By studying and analysing distinct teaching episodes of lessons, such as the start, main topic focus and plenary the trainees begin to appreciate how good and outstanding lesson plans are translated into good and outstanding teaching performances. Content analyses of lessons are therefore an initial, fundamental building block of developing highly effective professional situational judgement and vision. Content analysis by itself of course is not nearly enough.

Whilst content can straightforwardly be analysed retrospectively with the benefit of hindsight, professional vision/reflection-*in*-action arguably involves a much more sophisticated, dynamic, active, 'real-time' conceptualisation of 'quick thinking expertise' to navigate best ways for teachers to most effectively make positive impacts on pupils' learning. The very brief time durations typically involved in decision making whilst teaching can mean that aspects of professional vision operate virtually instantaneously. Thus professional vision may be fleeting and difficult for trainees to capture and internalize. Hattie and Clinton (2014, p.7) have trialled a 'visible classroom' system to make transcripts of teacher-pupil dialogues in lessons available in 'real-time' to the teacher and pupils. Skipp and Tanner's evaluation (2015, p.4) found "pupils did not seem to use live transcripts of teacher dialogue regularly, consistently, or in a way that would suggest an obvious benefit in learning". And "few teachers spent time reviewing the verbatim transcripts" (p.4). They concluded "To maximise the impact of the feedback, teachers would benefit from being given greater opportunity to review and discuss their practice with peers and managers" (Skipp and Tanner, 2015, p.4).

Santagata (2014, p.198) has suggested a model for using video for teacher learning that aims to develop and improve beginning teachers' abilities to systematically analyse and reflect on their teaching:

> When choosing video as a tool for teacher learning, it is important to consider four broad questions:
> (1) What is the teacher learning purpose of using video?
> (2) What types of video will work best for that purpose?
> (3) What viewing modality will best serve that purpose?
> (4) How can we assess that we have achieved our purpose?
> Santagata (2014, p.198).

The purpose of video-enhanced preservice teacher learning using the Lesson Observation On-line [Evidence Portfolio] Platform [LOOP] is to allow trainees to retrospectively see, and have the facility to repeatedly access, 'first-hand' their teaching performances in authentic school settings (Cooper, 2015). By bringing together much of the key evidence about a teacher's lesson (teaching performance video, lesson plan, accompanying instructional resources such as PowerPoint slides, question sheets, resource sheets – e.g. drawings, graph axes, data sets, pupil seating plan annotated with current attainment grades, three representative pupils' outputs from the lesson, the trainee's self-evaluation of the lesson, the university tutor and/or school-based subject mentor's evaluation of the lesson as well as edited video-annotated excerpts/clips identified as typical and representative of the lesson) opportunities are opened up for trainees to develop and improve their professional vision (Cooper, 2015; Phillipson, Cooper and Phillipson, 2015). This collation of evidence-based teaching practice and its assessment are at the heart of the LOOP concept.

Following feasibility testing in 2012 the most cost-effective and straightforward type of video for the LOOP project was to use a static Flip High Definition [HD] video camcorder typically positioned at the back of a classroom, for example on a filing cabinet or book shelf/case at the centre of the back wall. The Flip cameras used were equipped with wide-angle lens and stabilising tripod stands. The HD video footage for a lesson of an hour's duration typically produced a Windows Media Player [mp4] file of between two and three Gigabytes. The Flip camcorder used in a static position mode is easy to use since, ignoring the zoom focusing function, means that it just takes one press of the red record button and the recording is made in stand-alone-mode. Whilst it is recognised that HD video footage can have a 'flattening effect' on the three dimensions

of a classroom the view that such a video provides is not all that dissimilar to that experienced by a static face-to-face observer present in 'real-time' in the lesson.

The early findings of the small-scale research involving the evidence collated on the LOOP Google Drive and the feasibility testing of the ICALT lesson evaluation instrument suggests that Flip HD video footage of teaching performances, used in conjunction with a range of accompanying evidence may be able to produce reliable, shared, consensus-understandings of preservice teachers' teaching.

Professional Vision and video-enhanced teacher learning in some preservice teacher education courses in England

Professional vision in the Post-Graduate Certificate in Education [PGCE], Schools Direct, Teach First, Post-ITT Mathematics Subject Knowledge Enhancement [SKE] course, Foundation Degree in Mathematics [FDiM] and Mathematics' Subject Knowledge Enhancement [SKE] teacher training courses on which I have taught and tutored in the last six years is developed as follows. If we consider the PGCE and Teach First courses in the period 2012 to 2014 then PGCE student-teachers did a microteaching activity in the pedagogically 'safe' context of university teaching rooms, early on in their course in September of semester one in which they each taught seven minutes of a plenary to a mathematics lesson about number or algebra from the Key Stage 3 national curriculum for mathematics in England. The plenary episode of a lesson is chosen deliberately to require the trainee to plan what would have been taught in a typical hour-long lesson and demonstrate various teaching skills that may be expected to be included in a plenary to a lesson. Microteaching as a form of simulated 'approximation to practice' in a virtually 'risk-free', psychologically non-threatening, 'pedagogically safe' environment, such as the university training sessions is a key introduction to teaching for trainees. They practise planning their lesson, anticipating and imagining what they would have taught up to the point of the plenary and how their lesson would have ideally/optimally have played out. They perform their seven minutes of teaching, practising their explanations, questioning techniques, use of assessment-for-learning strategies, such as students using mini-whiteboards to provide answers and so on.

The trainees are video-recorded teaching their plenary to either the whole secondary mathematics cohort (typically between 35 and 40 students/trainees) or to one half of the cohort. The trainees then have a two hour scheduled follow-up university taught session to 'reflect on [their] microteaching'. The student-teachers are provided with a structured self-analysis framework document in which they write/type up answers to specific questions about, for example, the types of questions they asked, what went well about their teaching and how their teaching could have been even better if …?

The trainees also have to type up a transcript of their seven minutes of teaching, noting particular speech patterns, pronunciations, use of key words from their learning outcomes for the lesson, mathematical terminology and so on. Session and module evaluations for Autumn 2014 indicate that over 90% of the trainees (n=34, not including two people who were absent on the day of the microteaching) believed that the microteaching simulation, videoing and the follow-up activities were very important and very valuable features of their professional development in semester one. The 34 trainees that taught plenaries were also asked to write between one and two pages of A4 reflecting on their microteaching, based on some organising questions such as '1. How did you feel before you did your microteaching episode?'; '2. How did you feel as you were teaching?'; '3. Key learning points/moments from planning the microteaching?'; and '4. Key learning points/moments from actually teaching your plenary?'. The response rate for the reflective practice task was 100%. For example, a female trainee, under 25 years of age, in response to question 3 noted "Overall, I feel that the process of microteaching has been very useful to me as a beginning teacher. Looking back at the manner in which I approached the planning has led me to the conclusion that using the plenary as a starting point when planning a lesson can be more useful than planning from the start of the lesson." A male trainee, under 25 years of age, in response to question 4 noted "I believe it comes down to the teacher's ability to 'read a class' and understand what level they are at when deciding which materials and resources will be most suitable and effective". It is important to note that the microteaching activity the trainees do in September of semester one is the first self, peer and tutor-assessed teaching they do on the secondary mathematics course. Whilst the trainees do some starters to lessons and short teaching episodes in the first three 'serial attachment weeks' of their first period of teaching experience it is the microteaching that forms the

foundation to the types of reflective practice they subsequently engage in throughout their time in teacher training.

Typically in November of semester one, having done three weeks of observations and some small-scale introductions to teaching in their 'clinical practice' schools they begin six weeks of teaching approximately a third of a 'main scale' subject teacher's timetable. During those six weeks their school-based subject mentor and the school's professional mentor (typically a deputy headteacher or assistant principal) formally observe each trainee on six occasions (typically once a week for the six week period of initial teaching experience). A university tutor visits the trainee at their school to do two formal lesson observations/evaluations, typically once towards the beginning of the six week period of initial teaching experience and again towards the end of the six weeks (hopefully to give the trainee opportunity to demonstrate progress) (Cooper, 2015).

In the case of the five Teach First 'participants' I professionally tutored in 2012-13 they had eleven school visits from me, of which seven involved lesson observations, with at least five of those being video-recorded for their self-analysis, self-evaluation and self-study. This, together with parallel research and development I did with trainees on the PGCE course formed the basis of the **L**esson **O**bservation **O**n-line (Evidence Portfolio) **P**latform [**LOOP**] concept/project that has been feasibility tested in England and Australia (Cooper, 2015; Phillipson, Cooper and Phillipson, 2015). Trainees did their own self-analyses/self-evaluations of their lessons very soon after face-to-face observations of their teaching by me and were subsequently given DVDs of their lessons to study. As their tutor I had access to their video recordings of their lessons, (as they did via DVDs) their lesson plans, accompanying lesson resources (artefacts such as PowerPoint slides, question sheets for pupils, resource sheets for pupils' drawings/ diagrams/charts/graphs, pre-instruction tests/quizzes, post-instruction tests/quizzes, seating plans of classroom layouts with pupils' most recent attainment grades and so on) as well as at least three tangible pupil-outputs from each of the videoed lessons they taught. The pupil-outputs were typically representative of a high-attaining pupil in the class being taught, a 'mid-range' pupil and a pupil with lower than expected attainment in terms of the average attainment for that class. In a small number of test cases trainees have identified three, seven minute excerpts, typically from the start, middle and

plenaries of lessons which they have gone on to analyse in finer detail, particularly in relation to the indicators referred to earlier (Cooper, 2014).

In the last year, year-and-a-half the LOOP concept has been further tested in some small-scale trials in Melbourne, Victoria, Australia (Phillipson, Cooper and Phillipson, 2015). The LOOP (Australia) project has involved five student teachers, four studying secondary teacher education and one studying early years teacher education at a university in Melbourne in the state of Victoria, video-recording their own lessons in schools using Flip High Definition Camcorders and uploading their videos and accompanying documentary evidence about their lessons to the Australian University's secure, password protected, LOOP Google Drive platform. Prior to a research and development fieldwork visit to my LOOP project colleagues in Australia in 2014 I feasibility tested various practical, pragmatic approaches for preservice teachers to cost-effectively video-record their lessons and upload them to a secure, on-line file store (Newton et al, 2014). My university's institutional virtual learning environment [VLE], the Secondary Teacher Education team's electronic Moodle repository and the university's Pebble Pad digital file store were all evaluated with regard to their capabilities in relation to uploading and subsequently accessing/downloading High Definition digital video files. None of those three possibilities was deemed suitable for uploading and accessing/downloading video files because of the large file sizes created by mp4 video recordings and potential difficulties in terms of internet connectivity and file transfer rates, most particularly when uploading videos to the LOOP.

In Spring 2014 I feasibility tested the possibility of using YouTube to compress video files whilst at the same time using the privacy setting and 'unlisted' facility to restrict access to uploaded videos. YouTube arguably has some of the best video compression software currently available worldwide. A two to three Gigabyte video mp4 file typically takes between 45 minutes to one hour to upload to YouTube, using a fast/superfast broadband connection, after which it is compressed to a fraction of that size, typically between 100 and 150 Megabytes. In the process of researching the edTPA Teacher Performance Assessment licensure process in the USA I found a video compression software application, 'Any Video Converter' (edTPA, 2014). This was capable of being downloaded as a stand-alone program and could compress larger video

files to much smaller files that could subsequently be stored more easily in a secure, password protected LOOP Google Drive folder, together with all of the accompanying sources of evidence that the preservice teachers (and mentors/supervising teachers/ university tutors/ academics) provided about the lessons.

A key research finding was that the five 2012-13 Teach First participants universally felt that having at least five of their in-school lessons videoed and then having the opportunities to study them, analyse them and reflect more deeply in their reflective journal assignments about them was some of the very best, personalised, bespoke/tailored professional development they had across their whole year of teacher training. The five Teach First participants were three scientists, one mathematician and one historian. They were all under 25 years of age and had very recently graduated with high honours from 'Russell Group' universities in England.

In relation to the PGCE secondary mathematics course at the beginning of semester 2 (January) the trainees did a microteaching activity in which they each taught seven minutes of the main teaching topic of a lesson, in particular focusing on the most effective and efficient conceptual development of the mathematical learning objective they had randomly selected. In secondary mathematics' lessons in England the first five to seven minutes of a lesson are typically given over to a brief mathematical starter activity that is often related to the main teaching focus of the lesson that follows on after the starter. The trainees randomly select a learning objective from the Key Stage 4 mathematics national curriculum/programmes of study/General Certificate of Secondary Education [GCSE] mathematics examination content (typically about geometry and measures – what previously were referred to as 'shape and space' topics). In their seven minutes of teaching the trainees are meant to analyse such items as was the 'pupils' version' of the learning objective clear? Was it specific? Was it shared with pupils? Were the learning outcomes differentiated? Did the learning outcomes indicate target grades? Were they shared meaningfully with pupils? Did the teaching build on previous knowledge/prior learning? How clear was the teaching? How clear were the teacher's explanations? How clear were the 'models' of solutions? And so on.

Session and module evaluations for Winter/Spring 2015 again indicate that over 90% of the trainees (n=32, not including two people – not the same two as before – who were

absent on the day of the microteaching) believed that the microteaching simulation, videoing and the follow-up activities were very important and very valuable features of their professional development in semester two. It is also interesting to reflect on the fact that for many of the trainees the second microteaching event is one of the relatively few teaching episodes they do independently in approximately two-and-a-half months between mid-December and the end of February.

Assessing preservice teachers' professional vision

The assessment of our trainees' professional vision is still developing, improving and evolving and that is likely to be the ongoing situation for the foreseeable future given the recommendations of the Carter Review of ITT (Carter, 2015). Clearly it has been possible to assess the quality of the student-teachers' structured self-analysis documents about the microteaching activities from semesters one and two. For example, session and module evaluations for Autumn 2014 and Winter/Spring 2015 show that over 90% of the trainees (n=34 and 32 respectively, not including those who were absent on the day of the microteaching) believed that the microteaching simulation, videoing and the follow-up activities were very important and very valuable features of their professional development in both semesters one and two. We are trying to work towards using the LOOP concept (Cooper, 2015) together with video-annotation of excerpts from lessons recorded in schools that the trainees think are representative of their teaching. To a reasonable degree in ITE/ITT we are trying to develop trainees' professional vision about the efficiency and effectiveness of the pedagogical skills they use, particularly in terms of their conceptual development of the mathematical topics they are teaching. And, to some extent, almost as importantly at this stage, we are focusing on the content-related structuring of lessons, the variety of pedagogical activities that have been included and how the trainees' lesson plans actually translate into their teaching of the subject knowledge within the context of classroom lessons in secondary schools where trainees are doing their periods of teaching experience.

When assessing student-teachers during their two periods of 'clinical teaching practice' lessons may typically have pedagogical strengths (what went wells) such as 'good teacher presence', 'good relationships with pupils', 'effective use of praise and pupils'

names', 'shared learning objective(s) and learning outcomes meaningfully', 'moved around the classroom monitoring and checking pupils' learning and progress', 'used closed and open higher level questions effectively', 'used mini-whiteboards effectively'. They will also have subject knowledge strengths (what went wells) such as 'referred to key mathematical terminology', 'developed the key mathematical concept efficiently and effectively', 'good use of relational understanding through 'real-life' problem-solving', 'good use of procedural steps and stages for finding the equation of the tangent to the circle' and so on.

In terms of aspects of the trainees' teaching targeted for development and improvement (teaching would be even better if …) beginning teachers' lessons may typically involve pedagogically 'weak or inappropriate transitions between episodes', 'weak or inappropriate management of pupils' behaviours in lessons', (often referred to by the shorthand 'behaviour management') 'subject knowledge weaknesses', (for example, the teacher teaching pupils to move the decimal point when multiplying or dividing by 10, 100 and 1000) 'pitching the teaching/instruction at too high, or conversely too low a level', 'the pace of the teacher's teaching and/or pupils' learning was too slow, or too fast', 'not leaving sufficient time for a meaningful plenary to the lesson', 'not referring back meaningfully to the learning objective(s) and learning outcomes', 'not leaving sufficient time for pupils to pack away in an orderly fashion and leave the classroom in an orderly fashion', 'pupils were too passive during the lesson', 'the teacher talked at the pupils for far too long' (a 'teacher dominated' lesson), 'few opportunities for pupils to engage with the 2014 mathematics' national curriculum core aims of developing fluency, reasoning mathematically and solving mathematical problems.

What we are working towards is trainees developing their own 'what-went-wells' and 'even-better-ifs' from their actual in-school lessons so that self-analyses and self-evaluations are more closely aligned to their subject-mentor teachers' judgements of their teaching and their university tutors' judgements of the trainees' teaching. These are complex, sophisticated, challenging, evolving and extensive aspects of further research and development both in terms of video-enhanced teacher learning and ITT curriculum design and development (Carter, 2015).

The International Comparative Analysis of Learning and Teaching [ICALT] project seeks to 'measure teaching quality in several European countries' through face-to-face lesson evaluations by trained observers (van de Grift, 2007; 2014; van de Grift et al 2014; Maulana et al 2014). The lesson evaluation instrument at the heart of measuring teacher quality is described as a '32-item event-sampling evaluation instrument' used to observe teachers' classroom practice across six domains: 'Safe and stimulating learning climate' (15 event items, 4 teacher behaviours); 'Efficient organisation' (15 event items, 4 teacher behaviours); 'Clear and structured instructions' (24 event items, 7 teacher behaviours); 'Intensive and activating teaching' (29 event items, 7 teacher behaviours); 'Adjusting instructions and learner processing to inter-learner differences' (12 event items, 4 teacher behaviours); and 'Teaching/Learning strategies' (19 event items, 6 teacher behaviours). Collectively that means there are 124 event items that may, or may not be observed and 32 teacher behaviours to rate. There are three further items about pupils' academic engagement in the lesson that included behavioural indicators such as 'Learners take an active approach to learning' and 'Learners are fully engaged in the lesson'. The 32 teacher behaviours and three pupil indicators make up the 35 behavioural indicators of the "Lesson observation form for evaluating the pedagogical and didactic practice of teachers" (van de Grift et al 2014, p.152). Observers rated the items on a four-point response scale, ranging from 1 (mostly weak) to 4 (mostly strong).

Observers receive training from the ICALT team from the Netherlands. It involves explaining how the observation instrument has developed over the last 20 years and discussions about how to evaluate teaching behaviours, working from right-to-left identifying observed events through to rating behaviour items using the four-point response scale. Observers then observe two 20-minute duration video-recorded excerpts of lessons utilizing their usual lesson observation practice and then score each lesson. van de Grift et al (2014) note:

> After each observed lesson both the percentage consensus of the observers and the extent to which the observers agreed with previously set criteria was established. … Observers who reached the consensus of higher than 0·70 were sent to observe and evaluate student teachers' teaching practices (p.153).

Some small-scale research about videoing microteaching, LOOP lesson evaluations and consensus building using the ICALT lesson evaluation instrument

Some of the initial, preliminary research and development in terms of professional vision and use of video for helping teachers to develop and improve their teaching performances in lessons is reported in my Australian Journal of Teacher Education article (Cooper, 2015). The LOOP (Australia) project has involved five student teachers, studying teacher education at a university in Melbourne in the state of Victoria, video-recording their lessons in schools and uploading their videos and accompanying documentary evidence about their lessons to the LOOP Google Drive platform.

Six annually recruited cohorts of PGCE trainees at a university in the Midlands of England have been video-recorded in semesters one and two for their microteaching and 'reflecting on your microteaching' follow-up university taught sessions. As we have seen in the previous section all of these activities are highly valued by trainees in relation to their ongoing professional development towards becoming teachers.

I recently taught an ICALT lesson evaluation training session for 24 secondary school teachers from six of my university's teaching experience/placement partnership schools. The age range of the participants was between 25 and 45 years, and their numbers of career years spent teaching ranged from $1\frac{1}{2}$ to 22. The subjects the teachers are currently teaching covered almost the entire range of national curriculum subjects taught in secondary schools in England, for example: English, mathematics, science, Art, MFL, geography, computer science, design technology, PE, Business Studies and so on. The 24 teachers were shown two videos recorded at an international school in the Netherlands, one about an English lesson and another about geography. The two lessons were taught by two male teachers from England teaching their subjects in English to pupils from the Netherlands. In terms of video 1 about the English lesson 30 out of the 32 teacher behaviours and all three of the pupil items achieved high percentages of inter-rater consensus. The 24 teachers' responses for each item were examined to see if a consensus of over 70% was achieved. The results of a SPSS analysis showed that 94% (33 out of 35) of the items had a consensus of over 70% across the 24 teachers. In terms of video 2 about the geography lesson 23 out of the 32 teacher behaviours and one of the three pupil items achieved high percentages of inter-rater consensus. The results of another SPSS analysis showed that 69% (24 out of 35) of the items had a consensus of over 70% across the 24 teachers.

What this small-scale study of the ICALT lesson evaluation may suggest is that it may be possible to use it in conjunction with the LOOP process of collecting together a range of evidence about preservice teachers' lessons to reliably reach shared consensus-understandings about the quality of their teaching. The fact that 24 teachers can achieve high percentages of inter-rater consensus about the quality of the teaching they have observed from two video recordings may indicate that combining the best elements of the LOOP technological process and the ICALT lesson evaluation validity and reliability research could produce a cost-effective and workable dimension of preservice teacher formative professional development (Cooper, 2015; van de Grift et al 2014). The issue of cost-effectiveness ought not to be diminished in terms of discussing findings because economic austerity in Europe means that the $45 to $50 million spent on using video for teacher evaluations in the Measures of Effective Teaching [MET] project and the follow-up 'Best Foot Forward' project in the USA is beyond the budgets of most European countries (Root, 2014; Walsh, 2014).

As I reported in the previous section 'Assessing preservice teachers' professional vision' the 'usual lesson observation practice' we are in the process of developing uses a four quadrant reflection framework, as illustrated in figure 1 below.

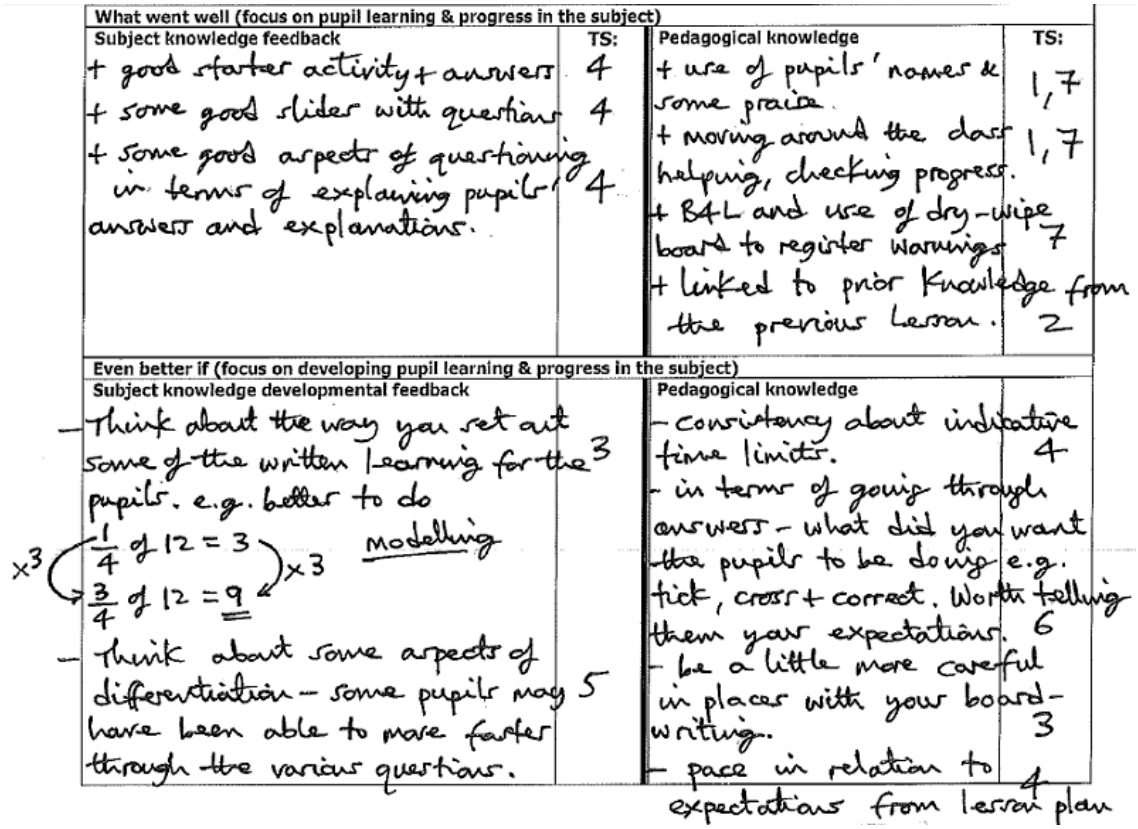

Figure1
Lesson Observation Report Summary Sheet

The example shown in figure 1 illustrates a number of key points. Firstly the top row is where the observer writes positive items about aspects of the trainee's teaching of subject knowledge (top left-hand side) that went well and aspects of pedagogical knowledge – i.e. more generic teaching skills (top right-hand side) that went well. Secondly the bottom row is where the observer notes points of possible development and improvement, again using the subject knowledge, pedagogical knowledge distinction suggesting how such a lesson might be 'even better if …' the teacher addressed those formatively assessed points. Note that the numbers in the columns headed 'TS' – for DfE Teachers' Standards; (DfE, 2012) – are references to the key teachers' standards in England that are most evident/observable in lessons. It is also important to note that the overarching headings to the two rows of the four-quadrant reflection framework focus on emphasising the development of pupils' learning and progress in the subject of the lesson. This emphasis is prominent in the OfStEd publications to which I referred earlier (OfStEd, 2014; OfStEd, 2015; OfStEd, 2015a).

What we are currently teaching our trainees to do is write their own 'what-went-wells' and 'even-better-ifs' immediately following their observed 'in-school' lessons using the

four-quadrant framework so that, in time, their self-analyses and self-evaluations become more closely aligned to their subject-mentor teachers' and their university tutors' judgements of the trainees' teaching. Preliminary results from the 'Best Foot Forward' project about using video technology to help improve classroom observations suggest some areas of teaching, into which participants who utilized video cameras, gained insight (Kane, 2014). Four of these 'insight' areas were things the 'treatment group' (i.e. those that had video cameras) said they noticed about their lessons and they included: pupils' participation in learning activities and episodes of the teaching; monitoring of pupils' understanding during the lesson; the teacher's own time management; and the pacing of the lesson (Kane, 2014). Pacing, for example, could be in terms of how episodes of lessons were used effectively and efficiently, how they compared with indicative time limits anticipated in the teachers' lesson plans, whether pupils moved through phases of learning as expected or whether the teacher realised they needed to move onto another activity or instructional procedural stage of the lesson.

An interesting aspect of correlation between the large-scale research of the MET and 'Best Foot Forward' projects with the small-scale LOOP and ICALT study I am reporting is that pupils' participation, monitoring pupils' understanding, teachers' time management and 'lesson pacing' often appear in Lesson Observation Report Summaries – see figure 1. Considering that the MET research alone conducted over 23,000 lesson evaluations via video-recordings then a cost-effective and workable solution such as using the LOOP and ICALT lesson evaluation instrument seems to be well worth researching and pursuing.

The search for a free, (zero cost) stable, straightforward to install and operate video-annotation tool to simply tag/time-stamp parts of the trainees' video-recordings of lessons they judge to be important and representative of their teaching has been one of the most problematic aspects of the research and development thus far although the VideoFragmentRating (VFR) annotation tool being developed in the Netherlands may be a possible innovative solution (Hulsman and van der Vloodt, 2015). The fact that the Carter Review of ITT (2015, p.39, paragraph 2•2•4) and the Sahlberg et al (2014) Review of ITE in Northern Ireland both emphasise the key importance of "beginning teachers observ[ing] and analys[ing] their own … teaching" highlights the critical

importance of evidence-based video-recording of student teachers' teaching in their placement/ practicum schools. What is missing at the moment in England is the support/ requirements of, for example, the edTPA teacher-licensing framework in the USA which actively requires student-teachers to submit video clips representative of their actual teaching in schools (Cooper, 2015; Hannafin et al, 2014; Sun and van Es, 2015, p.5) or the financial support/incentives associated with the Measures of Effective Teaching [MET] project/Harvard University 'Best Foot Forward' project (Root, 2014; Walsh, 2014). For example, Sun and van Es (2015) note:

> As part of Task 3 of the Performance Assessment for California Teachers (PACT) Teaching Event, preservice teachers videotape a lesson and self-select either a continuous 15-to-20 minute clip or two lesson segments edited together lasting no longer than 20 minutes that demonstrate their ability to teach mathematics (p.5).

If evidence-based teaching and teacher education is to become an important aspect of training beginning teachers then all teacher-training courses in England must include the requirement for all trainees to video-record at least two lessons in their placement/practicum schools (as a minimum specification, for example one lesson teaching a Key Stage 3 class and another teaching a Key Stage 4 class). In a technologically advancing 21st century it would also be prudent for beginning teachers to engage in advanced reflective practice activities, with the specific aim of teaching and developing the particular skills and aforementioned processes associated with professional vision. At a basic level the trainees could be required to record, edit, annotate, self-analyse and self-evaluate at least two of their in-school lesson videos. For each lesson trainees could produce three video clip excerpts, of between five and seven minutes in duration that they felt were representative of their teaching in the beginning part, middle and plenaries of their lessons. They would need to annotate or tag/time-stamp those video clips in relation to aspects of their teaching that went well and those that would have been even better if … The clips would also need to be referenced to the DfE 2012 Teachers' Standards (DfE, 2012). Producing transcripts of the clips would also be important to identify aspects of pupil-teacher interactions and dialogue as we have been trialling with our PGCE cohorts in their microteaching events.

The 'Visible Classroom' system, for example, is said to focus on "the production of verbatim captioning in real-time, as well as transcriptions and analyses of full lessons, providing teachers and students with extensive feedback through a dashboard that

illustrates various features of the lesson" (Hattie and Clinton, 2014, p.6). The 'Visible Classroom' process is indicated in appendix 2. According to Hattie and Clinton (2014) their system has nine advantages:

> a. Feedback is immediate (within 7 seconds) and can be used by teachers and students.
> b. The analytics are immediate (1 hour) and are aimed at informing teachers as to how students "saw" the lesson, and the attributes of their lessons that relate to these outcomes.
> c. (Hattie and Clinton) are incorporating artefacts of students work to code for achievement (including progress, surface and deep).
> d. (Hattie and Clinton) have developed "simpler" teacher talk (trialling with autistic students).
> e. (Hattie and Clinton) are developing norms, aiming for 10,000 transcripts to be part of researchable database.
> f. (Hattie and Clinton) are aiming to "computerise" or at least use reasonable costing to code the lessons in an immediate sense (e.g., via content domains, age, etc.).
> g. Unlike video, the transcripts can be quickly scrutinised, cut and paste (e.g., for use with para-professionals to revisit lessons with specific students), and cheaply stored.
> h. Can provide examples of excellence of teaching, student voice, and artefacts.
> i. Can provide crowd sourcing to add to the coding, analytics, and understanding of lessons. (p.7).

In their evaluation of the pilot 'Visible Classroom' system Skipp and Tanner (2015) concluded:

> **1.** Overall, teachers were positive about the Visible Classroom approach, and believed that it had the potential to benefit both themselves and their pupils.
> **2.** Most teachers were adept at using the technology in the classroom, even if they had not done so before this trial. There were some technical problems related to hardware, software, and internet connections, but after an initial bedding-in period most were overcome.
> **3.** Though few teachers spent time reviewing the verbatim transcripts, the online dashboard and more detailed feedback reports based on the transcripts were seen as valuable tools to support teacher development. To maximise the impact of the feedback, teachers would benefit from being given greater opportunity to review and discuss their practice with peers and managers.
> **4.** Pupils did not seem to use live transcripts of teacher dialogue regularly, consistently, or in a way that would suggest an obvious benefit in learning. Teachers had mixed views on whether the live transcripts might have additional benefit for disadvantaged pupils or their peers.
> **5.** Further research would be required to assess the level of impact the approach has on academic attainment. Prior to considering a full trial it would be valuable to undertake some additional development work to refine the approach. (p.4).

Conclusion

The aim of this paper was to report on some small-scale research presented at the 1st CIDREE International Seminar on Professional vision in teacher video-enhanced education. The contemporary context of ITE globally highlights the importance of preservice teachers understanding "what highly effective teaching looks like (what outstanding teachers know and do)" (Ingvarson et al, 2014, p.3). In England and Australia the Carter Review of ITT (2015) and the Teacher Education Ministerial Advisory Group [TEMAG] report (Craven et al, 2014) both emphasise that "research is highlighting the essential importance of teachers' mastery of the subjects they teach (i.e. subject content knowledge) and their mastery of effective teaching strategies for

teaching that content (i.e. pedagogical content knowledge)" (Ingvarson et al, 2014, p.3). International research has also sought to quantify teacher effectiveness in terms of its impact on pupils' learning. For example, according to Ingvarson et al (2014, p.2) "A very effective mathematics teacher has been estimated to produce at least 40% more learning in a year than a poorly-performing teacher".

The small-scale LOOP research conducted thus far between Spring 2012 and 2015 has begun to produce some interesting findings about 'approximations to practice' such as the videoing of microteaching events and reflective practitioner sessions as well as the 'in-school' LOOP videoed lessons evaluated using universities own Professional Experience Assessment Reports or the ICALT lesson evaluation instrument (Cooper, 2015; Phillipson, Cooper and Phillipson 2015; van de Grift et al, 2014). As Sun and van Es (2015) point out learning to analyse teaching in systematic ways is a core practice of highly effective teaching that involves learning to deconstruct instructional practice "to attend to particular events and interactions that are consequential for student learning, and to interpret the meaning behind those events to make informed teaching decisions" (p.1). Sun and van Es' (2015) exploratory study of the influence that analysing teaching has on preservice teachers' classroom practice supports some of the initial LOOP project findings that "analysing artefacts of teaching can lead preservice teachers to develop expert-like teaching practices" (p.10). In addition to the LOOP HD video recordings of 'in-school' lessons artefacts such as PowerPoint slides, question sheets for pupils, resource sheets for pupils' drawings/ diagrams/charts/graphs, pre-instruction tests/quizzes, post-instruction tests/quizzes, seating plans of classroom layouts with the pupils' most recent attainment grades listed, as well as at least three tangible pupil-outputs from each of the videoed lessons that were taught, combined with the ICALT lesson evaluation instrument for consensus building, potentially enhance the professional development of preservice teachers during their period of school-based teaching experience (Phillipson, Cooper and Phillipson, 2015).

The research reported in this article has some limitations. As has been noted the LOOP study has involved relatively small numbers of preservice teachers and serving teachers (n=5 to n=34) in a comparatively small number of schools, when contrasted with the MET and 'Best Foot Forward' projects (Root, 2014; Walsh, 2014). It is therefore not

possible to draw up any generalisations from the research and development thus far. As Cortina et al (2015) note the advent of video technology has potentially "made it possible to investigate quality aspects of instruction more objectively" (p.4). They point out however that observational recording instruments, such as the Classroom Assessment Scoring System (CLASS) – and the ICALT lesson evaluation instrument – are "high-inference coding systems, i.e. even with strong inter-rater reliability coding relies on the observer's interpretation of the student-teacher and student-student interactions as observed in the classroom, or based on video footage" (Cortina et al, 2015, p.4). Part of the reason that the LOOP research emphasises the importance of preservice teachers and their supervisors identifying shared professional vision about 'what went well' in lessons and how those lessons could be 'even better if …' is to try to build consensus about the quality of teaching by studying it from multiple perspectives using objective sources of evidence, where possible.

Much of what has been reviewed in this paper therefore supports Sun and van Es' (2015) conclusion that:

> Video affords close observation of instructional episodes. The ability to stop, pause, and rewind a video segment to study a classroom interaction multiple times allows [teachers] opportunities to see important events they may not notice upon first viewing, to interpret what is observed from multiple perspectives and to explore those perspectives with others. … by viewing and [deconstructing] ambitious pedagogy as represented in video records of practice, preservice teachers learned to see practices for making thinking visible during instruction. (p.11).

Acknowledgements

The authors thank the Australian Office for Learning and Teaching for their Seed project funding of the Lesson Observation On-line Platform [LOOP] project. We also sincerely thank the preservice teachers, their school-based mentors/supervising teachers, the university academics/tutors and members of the LOOP Reference Group who have contributed to the research. Finally we are very grateful to Gemma Gooding, the LOOP (Australia) project manager for her excellent support and administration.

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Appendix 1

Grade descriptors[1] – quality of teaching in mathematics

Note: These descriptors should not be used as a checklist. They must be applied adopting a 'best fit' approach which relies on the professional judgement of the inspector.

This subject specific guidance is supplementary to the generic grade descriptors which are found in the School Inspection handbook.

Supplementary subject-specific guidance
Outstanding (1)
■ Teaching is rooted in the development of all pupils' conceptual understanding of important concepts and progression within the lesson and over time. ■ Teaching enables pupils to make connections between topics and see the 'big picture'. ■ Teachers allow time for thinking and encourage discussion. Problem solving, discussion and investigation are integral to pupils' learning of mathematics. ■ Constant assessment of each pupil's understanding through questioning, listening and observing enables fine tuning of teaching. ■ Barriers to learning and potential misconceptions are anticipated and overcome, with errors providing fruitful points for discussion. ■ Teachers communicate high expectations, enthusiasm and passion about the subject to pupils. ■ Teachers have a high level of confidence and expertise both in terms of their specialist knowledge and their understanding of effective learning in mathematics. Teaching strategies ensure that pupils learn exceptionally well. ■ Teachers exploit links between mathematics and other subjects and with mathematics beyond the classroom. ■ Marking distinguishes well between simple errors and misunderstanding and tailors insightful feedback accordingly.
Good (2)
■ Teaching develops pupils' understanding of important concepts as well as their proficiency in techniques and recall of knowledge. ■ Teaching helps pupils to see that topics are connected and form a 'big picture'.

[1] These grade descriptors describe the quality of teaching in the subject as a whole, taking account of evidence over time. While they include some characteristics of individual lessons, they are not designed to be used to judge individual lessons.

Continued on next page of the OfStEd document – see below.

Good (2)	Supplementary subject-specific guidance
■ Many opportunities are provided for problem solving in various contexts, discussion and investigation, although these are not always integral to learning. ■ Teachers focus on pupils' understanding when questioning, listening and observing. ■ Barriers to learning and misconceptions are tackled well. ■ Teachers have a good level of specialist expertise which they use well in planning and teaching mathematics. Over time, they use an appropriate range of resources and teaching strategies that give due regard to the topic being taught and enable different groups of pupils to learn effectively. These include practical activities and, where appropriate, the outdoor environment. ■ Teachers have a clear understanding of the value of their subject which they communicate effectively to pupils, often with enthusiasm. ■ Some links are made between mathematics and other subjects and with mathematics beyond the classroom. ■ Marking identifies errors and misunderstanding and helps pupils to overcome difficulties.	

Continued on next page – see below.

Requires improvement (3)

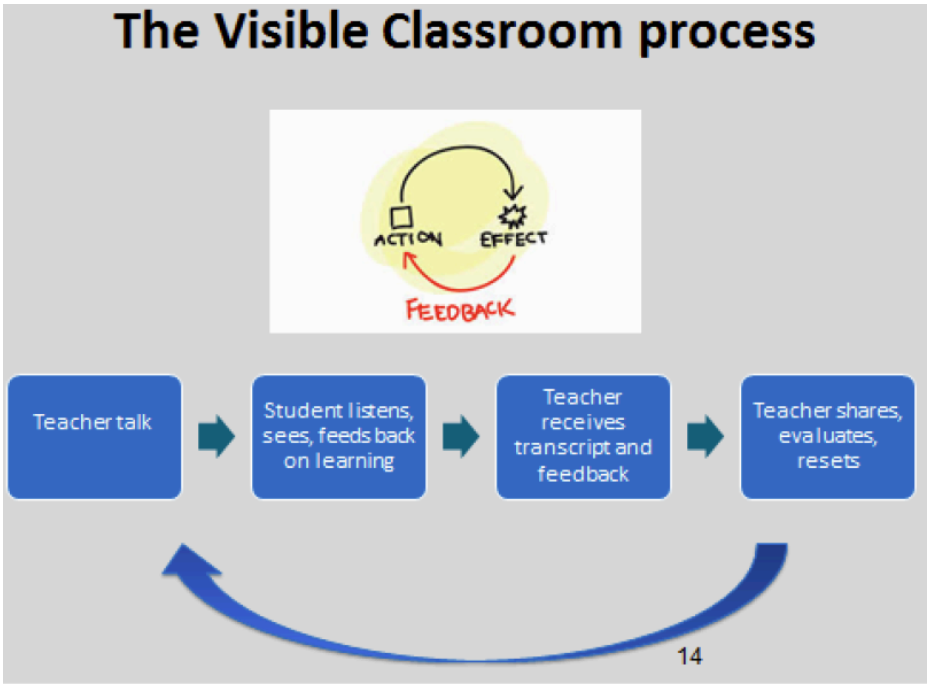
- Teaching focuses primarily on developing pupils' skills in mastering techniques and answering routine questions rather than understanding the underlying concepts.
- Teachers' explanations are accurate but give a piecemeal approach to learning a topic so that pupils are not helped to see the 'big picture'.
- Opportunities for problem solving are generally restricted to routine cases or are uneven, for example problems occur at the end of exercises so that not all pupils meet them. Pupils have some opportunities to investigate and discuss.
- Questioning tends to be closed rather than probing.
- Some barriers to learning and misconceptions are identified and tackled.
- Teachers have adequate subject expertise which they use in their planning and teaching. Over time, teaching strategies do not give due regard to the topic being taught or always enable different groups of pupils to learn effectively.
- Teachers understand the value of their subject which they communicate to pupils.
- Teaching occasionally makes links between mathematics and other subjects and with mathematics beyond the classroom.
- Marking is generally accurate and sometimes helps pupils to overcome difficulties.

Inadequate (4)

Teaching is likely to be inadequate where any of the following apply.

- Teaching focuses on pupils replicating techniques, and presents mathematics as a disparate set of skills and knowledge, resulting in a lack of adequate breadth and depth of learning over time.
- Teaching gives too few opportunities for problem solving, investigation or discussion.
- Teachers are not able to engage pupils' interest in the subject and do not monitor their progress adequately.
- Weaknesses and gaps in the teacher's knowledge of mathematics or how pupils learn the subject hamper lesson planning, the choice of resources, or the quality of teachers' explanations so that pupils make too little progress.
- Teaching provides too narrow a view of the subject, isolating it from other subjects and the outside world.
- Marking is too irregular, inaccurate or unhelpful to pupils.

Appendix 2


The Visible Classroom process
ACTION
EFFECT
FEEDBACK
Teacher talk
Student listens, sees, feeds back on learning
Teacher receives transcript and feedback
Teacher shares, evaluates, resets
14