

The World Association of Lesson Studies (WALS) International Conference 2016

Presentation Code	1A
Title	A future for lesson study: challenges and limitations.
Presenter/s	Derry Richardson (Professional Development Leader at Oxford University Press), Philippa Cordingley (Chief Executive Centre for the use of Research & Evidence in Education (CUREE)), Gary Jones (Independent researcher, Consultant and blogger)
Type of presentation	Colloquium
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Alumni Auditorium)
Outline	<p>The aim of this colloquium is to examine the practical future of lesson study in the UK as an approach to teacher professional learning and institutional development given the current policy and practice contexts.</p> <p>These are some of the questions that can be examined in this colloquium:</p> <ul style="list-style-type: none"> • Do the benefits of embedding lesson study in educational practice outweigh its professional and economic costs? • What role can Government policy have in promoting lesson study and what risks could be associated with Government adoption? • What are the risks of lesson study becoming a fad and being adopted uncritically? • If teachers were enabled to use knowledge of ‘what works’ in their teaching, would there be a role for lesson study? • How does lesson study relate to other practice based enquiry approaches, some of which might be less complex and costly? • What roles are there for universities and other teacher training providers in adopting and using lesson study? • What roles are there for professional associations and unions in adopting and using lesson study?

Presentation Code	1Ba
Title	Developing Problem Solving Skills in Mathematics
Presenter/s	Amanda Hazell and Zoe Bradshaw
Affiliations	The University of East Anglia (United Kingdom)
Type of presentation	Paper presentation
Strand	Lesson study in different cultural, subject and learning contexts
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Red)
Abstract	<p>Problem solving is a skill in mathematics which although always relevant has heightened priority due to the changes in the new mathematics GCSE (Department for Education, 2013). It has previously been a skill which is deemed underdeveloped within mathematics and therefore is a theme which teachers are seeking to develop in order to align with the new changes. The GCSE is the formal qualifications that students take at the end of KS4 in the United Kingdom. The focus of the enquiry was to explore, using lesson studies, the differences in students' approaches to problem solving. In doing so, key themes relating to the mediation of gender, ability, and academic motivation surfaced. In exploring these themes, the paper subsequently reflects upon pedagogical practices which might effectively enhance and develop students' ability to problem solve. The study took part in a mixed gender comprehensive secondary school with students taking part in the observation lesson ranging in age from 11 to 12 years old. The authors are the teachers who took part in the lesson study. Within the wider framework of a lesson study, the teachers as researchers implemented observation techniques in the form of video and peer observation with the accompanying teacher. In addition to this, students provided feedback on how they approached the problem solving tasks through a form of semi- structured interviews. To prevent potential power bias student interviews were conducted via the use of video diaries where no teachers were present which might have influenced students want to give their opinions. Following this, a thematic analysis of both the observations and student video diaries generated conclusions regarding how gender, ability, and academic motivation shaped the students' approaches to problem solving. Students' frustration and competitive need to find a specific answer inhibited their ability to thoroughly explore the problem posed thus overseeing vital aspects needed to solve the problem set. Many students expressed a passion for problem solving due to its freedom and un-rigid nature, which is something</p>

	teachers should nurture in students to ignite an interest in problem solving. More often than not, teachers are led by a culture in which attainment is the key. However, an atmosphere should be developed where the answer is not the key and students can explore the vibrant diversity mathematics and problem solving can offer.
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Presentation Code	1Bb
Title	Implementation of Lesson Study in Mathematics in Zambia: A Case Study of Three Schools
Presenter/s	Sibeso Likando
Affiliations	Deakin University (Australia)
Type of presentation	Paper presentation
Strand	Lesson study in different cultural, subject and learning contexts
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Red)
Abstract	<p>Several countries have adapted Japanese Lesson Study to improve the quality of teaching and enhance students' learning experiences in subjects such as mathematics. However, researchers have recounted instances where adaptations have overlooked some essential features of Lesson Study. Zambia adapted Lesson Study in 2005 with the help of the Japanese International Co-operation Agency. While Lesson Study remains a voluntary activity in many countries, Zambia has a policy that requires every public school to implement Lesson Study in every subject area. This study investigates the implementation of Lesson Study in mathematics in Zambia.</p> <p>Research questions/focus of the enquiry: This paper focuses on one part of the study, which examines how Lesson Study is being implemented in mathematics at the secondary school level.</p> <p>Research methods: As part of the study, case studies were carried out in three secondary schools in Zambia. Data were collected over a period of six months. At each school, two Lesson Study cycles were observed and video recorded; interviews were carried out with the principal, the CPD co-ordinator, and the two teachers who taught the research lessons; and relevant documents were collected. Transana and NVivo software have been used to transcribe and code the video and interview data.</p> <p>Analytical and theoretical framework: The study uses an Onion Ring Model (comprising five rings – National policy, school culture, classroom</p>

	environment, teachers' personal characteristics, and school level implementation of Lesson Study) to frame our understanding of how Lesson Study implementation is shaped by the nested sub-set relationship of the five rings. This research will contribute to scholarly knowledge by examining the implementation of Lesson Study in mathematics in Zambia. It will also extend the theoretical, methodological, and empirical understanding of Lesson study, and provide a basis for further research.
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Presentation Code	1Bc
Title	Bridging the Arithmetic-Algebraic Discrepancies
Presenter/s	Septiani Yugni Maudy
Affiliations	Indonesia University of Education (Indonesia)
Type of presentation	Paper presentation
Strand	Lesson study in different cultural, subject and learning contexts
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Red)
Abstract	<p>Transition from arithmetic to algebraic thinking inevitably leaves cognitive discrepancies for students. In this study, we aim at designing didactical bridge between the notion of variable and linier equation for seven graders from one of junior high schools in Bandung, Indonesia. By drawing on Didactical Design Research stance, we firstly map out the concept of linier equation with one variable by employing the method of repersonalization and recontextualization in order to explore both learning trajectories and obstacles inherent within such a concept. By doing so, didactical design representing contextual problems of linier equation was sequentially developed:</p> <ol style="list-style-type: none"> 1) Applying Bruner's idea of modes of representation to manipulate engaging tasks for students to grasp the idea of variable; 2) Exploring predicted students' responses towards problems presented in the forms of $x \pm b = c$ and $ax \pm b = c$; and 3) Harnessing collaborative learning to foster students' understanding of the relationship between arithmetic and algebraic thinking. Secondly, through analyzing students' work and vignettes of design implementation, we found that by representing the volumes of solution in the test tube, students intuitively connected the unknown variable by turning iconic drawing (test tubes, boxes, points) into symbolic form (x). Although students were able to expand their arithmetic ideas in dealing with problems related to linier equation, in fact they had difficulties to make sense of

	<p>algebraic equation. Thus, orchestrating various students responses were helpful for them to translate word problem into algebraic equation. Our experience has shown that it is not necessary for teachers to deliver thoroughly the didactical bridge; it is through collaborative learning that engages students to develop fruitfully their own learning bridge.</p>
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Presentation Code	1C
Title	Lesson Studies on Project Based Learning: Documentation and Assessment
Presenter/s	Masatsugu Murase, Atsushi Sakamoto, Yuu Kimura ,Christine Lee Jumpei Tokito and Shumpei Komura
Affiliations	The University of Tokyo (Japan)
Type of presentation	Round-table
Strand	Innovative uses of lesson study
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Room K)
Abstract	<p>It is considered that Project Based Learning is one of the effective learning approaches to develop 21st century skills. However it is still necessary to study what kind of competency is fostered in PBL. In our project, Japan Innovative Schools Network, high schools in Japan and overseas countries are collaboratively conducting PBL in various ways. These groups of high schools are called "clusters". We will report the cases from clusters in our project to discuss the results and tasks of PBL focusing on documentation and assessment of the learning process.</p> <p>For "Rebirth" of Tohoku from "Great East Japan Earthquake", Tohoku cluster (a successor of OECD Tohoku School) has practiced the project-based learning. The theme is "Think Green". Junior and senior high school students have engaged in policy-making which will be presented in the international roundtable in August 2017. The process of PBL is recorded with video cameras, and the students learning are evaluated by the rubric of KPI.</p> <p>In Fukui cluster, 3 high schools and 1 junior high school are implementing Project Based Learning and Inquiry Learning of existing subjects within their curriculums. Based on the project, Japan Innovative Schools Network, our students, teachers and researchers are writing Reflection Report that records their learning, teaching and coordinating processes each other. We examine how do Project Based Learning cultivate students' key competencies and change teachers' belief and practices, and how do enhance researchers' sense of practice by analyzing and evaluating our Reflection Reports. Moreover, we are considering and developing one of the good practices of professional development as lesson study inner and outer schools toward future teaching. We will report these initiatives and challenges.</p> <p>After the reports from clusters, we will ask discussant to make clear the results and tasks of our practice and will open the discussion to all participants.</p>

Presentation Code	1Da
Title	Lesson Study: Is this an Essential Ingredient for Successful Teacher Subject Specialism Training (TSST)?
Presenter/s	Naomi Sani
Affiliations	Plymouth University (United Kingdom)
Type of presentation	Paper presentation
Strand	Creating knowledge in practice; action research and other practice based research approaches
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Forum Seminar Room 2)
Abstract	<p>Acknowledging that there are simply too few mathematics teachers, the UK government is investing significantly in Teacher Subject Specialism Training (TSST). This programme 're-trains' teachers, of other subjects and from other phases, to teach secondary mathematics.</p> <p>Delivering TSST sessions I use constructive alignment to teach in a way that models the interweaving of pedagogy and subject knowledge (Schulman, 1986). Conceptual understanding, active participation and deep thinking underpin the ethos of this TSST. Participants are invited to teach lessons as part of their training and Lesson Study is a major constituent of this course. Using the Japanese Lesson Study model (APEC 2013) - of collaborative planning, reflective feedback and the polishing of the lesson for future use - the ethos of this TSST is positively promoted.</p> <p>For my PhD research I am conducting a four-year longitudinal study, following seven teachers who have been 'retrained' by way of the TSST initiative. I regularly observe lessons and interview these 'case study' teachers. Field notes, conversational dialogue and interviews with senior teachers, are also adding to the inquiry.</p> <p>From an interpretative paradigm perspective, I am attempting to see what is actually happening, as these 'retrained' teachers teach mathematics over a period of time. The approach I am using is a blend of general inductive analysis (Thomas, 2003) interwoven with the idea of 'common interpretive acts' (Schatzman, 1991) incorporated within the steps described by Creswell (2012): allowing findings to emerge from the data whilst simultaneously being guided by my research objectives; those objectives being to consider the research questions outlined below.</p>

	<p>The study asks the following research questions:</p> <ol style="list-style-type: none"> 1) Can TSST affect change in teachers' practices? 2) If so, what are the changes, what are the successes and what are the limitations? 3) Does TSST appear to be a viable option in alleviating the crisis surrounding the shortage of mathematics teachers? <p>This study is ongoing but early themes are beginning to emerge, in particular:</p> <ol style="list-style-type: none"> 1) the significance of the collaborative planning and Lesson Study aspect of the training 2) the need for ongoing support, coaching and mentoring - post TSST. <p>Continuing a collaborative approach back at 'base' often requires innovative overtures from the teachers and significant support from Senior Management. Within an environment which sustains a collaborative model of professional development, the TSST ethos (of reflective practice and teaching-for-understanding) can become embedded. Without ongoing collaboration and Lesson Study, TSST alone could be having very little impact.</p>
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Presentation Code	1Db
Title	The Impact of Lesson Study as a Methodology for Improving the Teaching of Mathematical Reasoning in Key Stage 3 Pupils.
Presenter/s	Jennifer Shearman and Joanna Randhawa
Affiliations	Canterbury Christ Church University (United Kingdom)
Type of presentation	Paper presentation
Strand	Creating knowledge in practice; action research and other practice based research approaches
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Forum Seminar Room 2)
Abstract	"Developing Mathematical Reasoning in KS3" is the focus for one of the Workgroups in the Kent and Medway Mathematics hub, which brings together all mathematics education professionals from schools, colleges, universities, CPD providers, maths experts and employers. This is a new way of harnessing all maths teaching expertise within an area, to spread excellent practice even more widely for the benefit of all pupils and students. The goal of the

	<p>“Developing Reasoning” project is to improve the teaching of mathematical reasoning in KS3 in and to identify effective approaches to department development and individual professional learning that achieve this. The template for the activity is a model of linked workshops and gap teaching tasks. An adaptation of Lesson Study is used as a method trialling and reflecting on the the professional development material, hence it is also the chosen methodology for assessing the impact of the change in teaching on both pupil learning and teacher attitudes. An earlier, mixed-method, interpretive case study pilot using Lesson Study to develop a specific area of practice (in this case with trainee teachers) indicated that a single iteration of collaborative planning had a measurable impact on pedagogy development and reflective skills (Shearman, 2014).</p> <p>This paper will present follow-up research to explore the extent to which a Lesson Study adaptation will develop the teaching of mathematical reasoning within mathematics lessons. Participants will use a scale of 0-10 to self-assess a lesson plan or teaching activity on at least 3 occasions; after the first draft (created by a single group), after the second draft (following a professional development session which includes a group discussion), and after evaluating the lesson following peer observation and group discussion. The criteria for self-assessment is an adaptation of the Ofsted criteria for ‘features of good mathematics teaching’ (Ofsted, 2008).</p> <p>The analysis and discussion considers what ‘point’ in the process it is perceived that practice develops, and to what extent the Lesson Study methodology was responsible for any development in practice. In addition, the criteria was used to measure the extent to which the lesson was planned to encourage development of mathematical reasoning, perhaps a change in practice from “Teaching as Telling to Teaching as Understanding”. (Lewis & Tsuchida, 1998, p. 12) The likelihood of further use of Lesson Study as a Professional Development strategy amongst the group is also discussed.</p>
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Presentation Code	1Ea
Title	Embedding Lesson Study in the School's Ethos
Presenter/s	Margaret Farrell and Carly Wilson
Affiliations	Belfield Community School (United Kingdom)
Type of presentation	Paper presentation
Strand	Leadership, management and policy aspects of lesson study
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Peter Chalk Rm 2: 1.4-1.6)
Abstract	<p>This presentation explores the journey of a school new to Lesson Study through to this becoming a fundamental part of school ethos and culture and a key driver in improving learning and teaching. At Belfield Primary School, the opportunities Lesson Study provides in allowing teachers to have time for professional dialogue has been instrumental in improving practice and transforming how we talk about our teaching and learning. It has supported a culture of trust, a drive for improvement and a shared responsibility for outcomes across the whole school.</p> <p>We will describe our development in terms of managing issues of organisation and devising a sustainable system which has enabled us to implement Lesson Study long term, without losing the integrity of key elements of the approach.</p> <p>We will consider key school issues such as timetabling, providing release time for teachers and ensuring the project is driven from the top by senior leaders.</p> <p>We will describe how we moved from implementing three lesson study cycles across the school year and have now developed 'Lesson Study weeks,' involving intensive sessions of lesson study, within which staff can plan, hold post lesson discussions and move both their own professional learning and that of the children forward. We will show how, by means of the Lesson Study approach, we have introduced new practices throughout our school and with schools within our local network including:</p> <ul style="list-style-type: none"> • Work on learning powers • Metacognition • Discussing learning processes as well as outcomes • Exploring effective feedback on learning. <p>As a result of our work in this area, four members of staff were filmed by Edge Hill University as part of the Every Child Counts Professional Development programme for Lesson Study. We also received recognition by the Office for Standards in Education (OFSTED) in our recent school inspection report:</p>

	The sharing of successful practice is at the heart of school improvement. Your teaching staff speak very highly of the positive impact of the 'lesson study' approach you have adopted. It is improving their teaching techniques and pupil progress. (Ofsted Report on Belfield Primary School, 2016).
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Presentation Code	1Eb
Title	Lesson Study and Teachers' Knowledge Management: A School Management Perspective
Presenter/s	Tetsuo Kuramoto
Affiliations	Aichi University of Education (Japan)
Type of presentation	Paper presentation
Strand	Leadership, management and policy aspects of lesson study
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Peter Chalk Rm 2: 1.4-1.6)
Abstract	<p>A recent trend in Japanese educational culture is that of a growing interest in "Lesson Study" and "Knowledge Management." Lesson study and knowledge management are fundamental to teachers' professional communities as they endeavour to improve school systems.</p> <p>The theory behind knowledge management involves the managing of all school functions by incorporating an individual teacher's knowledge and morale, by promoting each student's personal development and academic achievement, and by establishing collaborative relationships with parents and communities.</p> <p>Firstly, school management, including school educational goals, should be established (Plan). Secondly, it is necessary to establish a strategic and coherent teaching plan and curriculum, in order to implement the curriculum and actual lesson plan (Do), and to evaluate the educational effectiveness (Check). Finally, improved qualitative curriculum developments and teaching strategies should be completed within the school year (Action) (Takano, 1988; Nakatome, 2001; Kuramoto, 2008).</p> <p>The concept of knowledge management involves promoting all functions of the school organization by not only focusing on an individual teacher's knowledge, but also by emphasizing collaborative teacher-team learning communities within the school organization. The primary goal of lesson study is to effectively improve the overall quality of teaching, through demonstrating and sharing of teaching techniques with other teachers. Working in groups, teachers collaborate with one another, by meeting regularly to discuss learning goals, to plan actual classroom lessons, to observe how lessons work in practice, and then to revise and report on the results so that other teachers can learn something new through their practical research.</p> <p>Because the Japanese style of lesson study engages teachers'</p>

	<p>knowledge management at a school, the concept will also contribute to supporting overall school improvement. Therefore, lesson study is a necessary component of the concept of knowledge management. In other words, the concepts of lesson study and knowledge management lend themselves to the development of more positive school cultures by providing teacher autonomy, by enhancing problem-solving skills for school organizations, and finally, by enhancing accountability in teacher learning communities.</p>
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Presentation Code	1Ec
Title	The Guideline in Developing the School as a Learning Community
Presenter/s	Pariya Pipitphan
Affiliations	Satit Pattana School (Thailand)
Type of presentation	Paper presentation
Strand	Leadership, management and policy aspects of lesson study
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Peter Chalk Rm 2: 1.4-1.6)
Abstract	<p>Satit Pattana School, the case- study school, is a private school in Thailand with an enrolment of about 1,500 students. Its teaching team comprises 80 novice teachers (with limited teaching experiences) and a number of experienced teachers (with coaching and mentoring responsibility). The high teacher turnover rate forced the school to search for a sound solution, the Lesson Study for Learning Community (LSLC) and Professional Learning Community (PLC) were the school right answer. This formulated the objective of this study. Both Quantitative and Qualitative methods were used in data analysis. The data collected through unstructured interviews and observations and also those derived from observation reports and questionnaires were analyzed in the process of noticing, collecting, discussing and reflecting. The study involved 53 teachers from 8 different subject groups. The findings were: 1. The guidelines for developing a school as a learning community (SLC) were conducted in two phases which were:</p> <p>Phase 1: The construction of knowledge and understanding embedded with educational value by using 5-step learning process based on constructivism theory which comprised: a) questioning b) searching c) constructing d) communicating, and f) serving. Based on the lesson study (LS) practice, coaching and mentoring approach performed by heads of departments, administrators, and guest</p>

	<p>advisors, was used to form collaborative activities with the members of PLC to provide teachers of all subject groups at all class levels with opportunities to achieve continuous professional growth.</p> <p>Phase 2: The construction of SLC by using lesson study approach. There was collaboration between school members and those of PLC in designing and planning learning activities with an emphasis on child- centered learning philosophy. Targeted teachers from all subject groups were scheduled 4 times a year to undergo LS 5-step process which were composed of:</p> <ol style="list-style-type: none"> 1. Analyze 2. Plan 3. Do and See 4. Reflect and 5. Re-design. <p>2. It took Satit Pattana School a year to reach the findings that could be used as guidelines in employing LSLC. 2.1. The application and adoption of LSLC has affected at least 3 stakeholders which were:</p> <p>2.1.1. Students- the enhancement of students' learning achievement witnessed by a high increase of average scores of all subject groups mandated by the national tests. The close relationship among students, teachers, administrators and parents exists. 2.1.2. Teachers were regarded not as teaching professionals but as learning professionals. It maximized the power relations among students, teachers, administrators and parents, and also empowered teachers to continuous improvement in classroom teaching practices. 2.1.3. Administrators and assigned senior teachers attained higher potential of internal learning supervision, of coaching and mentoring responsibilities, and also of academic administration. In conclusion, the study has shown that the development of a school as a learning community could not be a success without commitment, effort vision of the stakeholders concerned.</p>
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Presentation Code	1Fa
Title	Alternative Training – Excellent Students and Lecturers Both Manage a Dynamic Course in the Development of Thinking.
Presenter/s	Dr. Lina Boulos
Affiliations	Sakhnin College for Teacher Education (Israel)
Type of presentation	Paper presentation
Strand	Developing professional learning communities: models and practices
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Purple)
Abstract	<p>The research relates to a joint management between excellent students and teachers in the course “Teaching for Thinking” in the “Excellent Students program” at Sakhnin College for Teacher Education. The students were full partners in the course management which included: planning, setting the objectives and schedule, and choosing the teaching and evaluation methods. These components changed from one meeting to another according to the students' way of learning and the reflective discussion which took place at the end of each session. This created a dynamic syllabus. Unlike other courses in the college, where the syllabi are fixed, the syllabus of this course had gone through some changes during the course. The research objective was to check the joint management of students and lecturers in the course which dealt with teaching for thinking and the influence of a process accompanied by reflection on the motivation of the participants and on the students' reflective thinking.</p> <p>The research population included two lecturers who deal with the field of thinking and the excellent students in the “Excellent Students program”.</p> <p>The theoretical basis of the content was based on theories of curriculum, reflection and motivation. Findings from quantitative and qualitative analyses of motivation questionnaires and reflection pages, at the beginning and end of the course, will be presented in the conference.</p> <p>The findings show a clear increase in the inner motivation of the students at the end of the course in comparison to the beginning. The dynamic nature of the course caused the increase of the students' motivation.</p> <p>The reflection analysis shows that the motive of the students in the course is their experience in sharing full partnership in determining the course content, teaching methods and assessment methods.</p> <p>The research suggests adopting a joint management approach as an alternative method in teachers training.</p>

Presentation Code	1Fb
Title	Establishing a Mathematical Lesson Study Culture in Danish Teacher Education
Presenter/s	Camilla Hellsten Østergaard, Charlotte Krog Skott, Kristian Kildemoes Foss and Kira Nielsen-Elkjær
Affiliations	Metropolitan University College (Denmark)
Type of presentation	Paper presentation
Strand	Developing professional learning communities: models and practices
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Purple)
Abstract	<p>Bridging theory and practice is a general challenge in mathematics teacher education. Research shows that Lesson Study (LS) is an effective way for prospective mathematics teachers to build relations between course work and field experiences (Potari, 2011). Many educational programs integrate LS in method courses as a frame for the prospective teachers' exploration of presented theory in field teaching (Fernandez & Zilliox, 2011). However, the prospective teachers in such LS-approaches often only slightly integrate substantial subject matter in the students' process-oriented activities (Skott & Østergaard, 2015). To ameliorate this shortcoming, we designed an innovative LS-course, consisting of a mix of lectures and LS's. The course was initiated by an Open Lesson by a respected Japanese teacher. In the course LS was used in two ways: On the one hand, LS constituted a method for the prospective teachers to explore their field teaching. On the other, the course formed a basis to continuously select the mathematical and pedagogical content, as for instance related mathematical topics, blackboard design and dramatization of joint reflections. Our aim has been to study how the designed LS-course contributed to the prospective teachers' professional development. Data was obtained mainly in the form of video- and audio-recordings of course work and 20 LS cycles. In addition we have analysed written reports prepared by the prospective teachers and conducted selected interviews to triangulate our findings. Data was coded and analysed using a grounded approach (Charmaz, 2014). In our analysis we draw on social and situated comprehensions of teachers' learning by using Hodgen's concept of knowing (2011). Hereby we are able to express the prospective teachers' development as changes in their participations in different practices in and across the different contexts (i.e. field teaching and course work).</p>

	<p>The major finding is that the prospective teachers changed their perception of the important course content: shifting from the LS process as a goal in itself to considering 'the subject matter in relation to teaching' as more important. The on-going content selection in the course was found to be the crucial factor for the observed change. The course work allowed the prospective teachers to reflect theoretically on their first-hand teaching experiences and hereby developing knowing. An additional finding is that a new culture among the prospective teachers was established, characterized by an inquiry stance to mathematic teaching. The prospective teachers recognised this new culture as an important factor in becoming a mathematics teacher.</p>
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Presentation Code	1Fc
Title	The Journey from Teaching Assistant to Teacher
Presenter/s	David Thomas
Affiliations	Glyndwr University (Wales)
Type of presentation	Paper presentation
Strand	Developing professional learning communities: models and practices
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Purple)
Abstract	<p>The paper will consider a small scale case study of four cohorts of students who have/(are) completing a level 6 Education Studies top-up degree having previously completed a foundation degree related to education.</p> <p>Alongside their degree studies the students have worked in either a paid or voluntary capacity in a teaching assistant or learning support role and have in many cases applied to study the top-up degree with the aim of completing initial teacher training to teach within the primary education sector. Many of the students have expressed a growing dissatisfaction with their teaching assistant role in that they have been increasingly expected to take on a wider range of responsibilities without an associated increase in status which has in part driven their ambitions of qualifying as a teacher. The paper will consider the views and experiences of four student cohorts namely:</p> <p>(A) Those who have completed the degree and their initial teacher</p>

	<p>training</p> <p>(B) Those who have completed their degree and are currently engaged in their initial teacher training</p> <p>(C) Those who are completing their degree and have been accepted for an initial teacher training placement and</p> <p>(D) Those who have decided not to pursue a career as a teacher.</p> <p>The aim of the paper is to assess the positives and negatives along the journey from teaching assistant to classroom teacher and as to how the experiences, skills and knowledge acquired as a teaching assistant in addition to theoretical studies within the Education Studies degree have impacted upon their personal journey. It will consider motivation to enter the teaching profession, barriers and enablers encountered and whether this career path should be given greater consideration and emphasis as a route into the teaching profession to engage with an untapped wealth of classroom practitioners who are experienced in particular in working with students with ALN/SEN already within the education workforce.</p>
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Presentation Code	1Ga
Title	Our Learning and its Impact Through Lesson Study
Presenter/s	Yais Gumbira Buanawaty
Affiliations	GagasCeria Primary School (Indonesia)
Type of presentation	Paper presentation
Strand	Impact of lesson study on student learning
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Peter Chalk Rm 3: 2.1-2.3)
Abstract	<p>At the beginning of the school year, teacher felt third grade student have difficulties during science lesson. When teacher taught part of plant more specific about roots, students were asked to observe the shape and characteristics of some of the roots of plants. Then they draw the result of the observations on worksheet. The work showed that the children do not show the root image in detail. It was also found most children describe the same form between one root sample and another sample. From these results, teacher make a conclusion that students have difficulty in observation skills.</p> <p>GagasCeria Primary School has been conducting school-based lesson study since 2009. Once teacher know the problems that occur in the classroom, teacher use lesson study as a tool to solve problems in the classroom. Start with teacher told fellow teachers about the difficulties in the lesson. In every lesson planning session,</p>

	<p>consciously teacher and colleague teachers who helped plan seeks to create a lesson, which include develop observation skills in student. In addition, teachers are trying to learn more about the science curriculum. At that moment, the teacher felt it turns out that the understanding to the science curriculum has not been good. In the open lesson activities, teacher get a lot of advice from other teacher colleagues both at the planning session and in post lesson discussion session. This activity is carried out consistently for one school year. In addition to opening her own class, the teacher also learn several time from other class. One year later, when the student in the 4th grade, learning about the human skeletal material, teacher do a comparison between worksheet this year, with worksheet 1 year ago. Teachers found a significant difference from the way student draw observation on the worksheet. Students draw image from the observation with more detail. Students can accurately depict the position of the human skeletal, and the characteristics of the bones based on the observation they do.</p>
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Presentation Code	1Gb
Title	Using Lesson Study to Maximize the Progress and Attainment of Disadvantaged Pupils
Presenter/s	Debbie Nunn and Ciara Moran
Affiliations	Woodfield Primary School (United Kingdom)
Type of presentation	Paper presentation
Strand	Impact of lesson study on student learning
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Peter Chalk Rm 3: 2.1-2.3)
Abstract	<p>This presentation explores how a small primary school in an area of high social deprivation in Plymouth, used Lesson Study as a means of collaborating on planning, observation, teaching and reflection in order to maximise the progress and attainment of disadvantaged pupils.</p> <p>As part of a National Education Endowment Foundation funded study, a group of 3 teachers from Woodfield Primary School were involved in the project which took place between September 2014 and July 2016.</p> <p>The teachers received training from expert facilitators to discuss the issues, unpick the research surrounding Lesson Study and explore strategies for engaging all pupils but particularly disadvantaged pupils, in the learning process. This training primarily focussed on pupil engagement predominantly within</p>

	<p>English and Maths; adapting texts and resources to focus on all children and looking at different strategies to build independence. The Lesson Study process was introduced in individual schools, working in trios with the role of the expert teacher taking the lead to support less experienced practitioners. The cycle followed the traditional model of Lesson Study, which encompassed the pre-lesson discussion, planning, delivery, post lesson discussion and pupil interviews, all of which then fed into the next cycle. Regular training was provided with examples of good practice and case studies presented along the way at regional school cluster events. The outcomes at Woodfield Primary School, during this study, illustrate the effectiveness of the Lesson Study approach on increasing pupils' progress and enhancing teacher learning, in the context of the Primary School system.</p> <p>The outcomes, in terms of pupil progress and teacher learning, were positive, with identified pupils making more than expected progress across the period of study and achieving at least age related expectations by the end of KS2. The impact has been driven by the iterative process of reflection and, external observation and feedback. Enhanced by pupil response and ensuring this is built into future planning. Staff have valued the process, with the ability to reflect and adjust their teaching allowing them to build confidence under the expert teacher. This in turn, has led to a whole school commitment to Lesson Study to develop and fine tune teaching therefore improving outcomes for disadvantaged pupils.</p> <p>Through this presentation we will disseminate the practical application of Lesson Study, focussing on how the school has used the process to secure pupil progress and embed its principles into the School Improvement cycle.</p>
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Presentation Code	1Gc
Title	English as a Foreign Language Pre-Service Teacher Preparation through Lesson Study: Evaluation of a Pilot Project
Presenter/s	María Laura Angelini, María Neus Álvarez and Wasyl Cajkler
Affiliations	Universidad Católica de Valencia San Vicente Mártir (Spain)
Type of presentation	Paper presentation
Strand	Impact of lesson study on student learning
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Peter Chalk Rm 3: 2.1-2.3)
Abstract	This paper presents the perceptions about the impact of lesson study on a group of undergraduate student-teachers from the Catholic University of Valencia San Vicente Mártir (UCV), Spain, on a

	<p>classroom-based approach to teaching English as a Foreign Language (EFL) to children in preschool and primary education. A group of experimental student-teachers (N=12) volunteered to implement lesson study in two schools in Valencia. They were in the third year of the teaching degree and had chosen English teaching as their specialization, attending a four-month course called 'Teaching EFL and Children's literature' during 2015-2016. This study was innovative in that students, for the first time, worked collaboratively in lesson study during their teaching practice, teaching English to very young learners. Written responses (N=12) to the open-ended question:</p> <p>What are your perceptions about lesson study?</p> <p>were gathered from the students' written reports submitted after the pilot experience allowed examination of the potential of lesson study in initial teacher training. Results reveal that participants could successfully anticipate to possible problems through direct observation two weeks before implementing their first lesson. Participants found a totally new dimension to their teaching practice by reinforcing their skills in classroom management at the time they improved their language abilities. Through the children's responses to the student-teachers' questions post-treatment, prospective teachers learned that the idea of using games and active techniques in the classroom was widely acclaimed by the children in primary who proved retention of the content taught. Nonetheless, some participants indicated that the interviews to the children in preschool did not yield enough information as the infants were not yet cognitively ready to provide satisfactory verbal answers.</p>
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Presentation Code	1H
Title	Integrating Research in Teaching: Experiences from Learning Study
Presenter/s	Ulla Runesson, John Elliott, Ingrid Carlgren, Anja Thorsten and Malin Tväråna
Affiliations	Jönköping University (Sweden)
Type of presentation	Symposium
Strand	Creating knowledge in practice; action research and other practice based research approaches
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Green)
Abstract	<p>Integrating research in teaching: Experiences from Learning study On the one hand the significance of involving teachers in research, and the idea of ‘teachers as researchers’ have been promoted, on the other the ‘gap’ or great disconnect between practice and theory is frequently discussed. This symposium is based on the idea that research must be integrated in teaching in order to be relevant for practice. What challenges and benefits this can bring are presented and discussed in this symposium. Examples from a theory informed version of lesson study — Learning study — with the focus on the object of learning, will be presented.</p> <p>Learning Study as Research on (the Meanings of) Knowings <i>(Ingrid Carlgren, Stockholm University, Sweden)</i></p> <p>The purpose with my paper is to describe and discuss how Learning studies can be used to generate knowledge about knowings which is of great importance in teachers’ work. The object of teaching is the development of student knowing, and teaching practices are organized to produce knowings of specific knowns. (Carlgren, Ahlstrand, Björklund & Nyberg, 2015)</p> <p>An important aspect of the Learning study is its focus on teaching and learning of a specific object of learning, i.e. some specific knowing. Although some objects of learning are well known and described it is not uncommon that the idea of the learning object is vague and unclear in the beginning and becomes specified during the research cycles. The learning object is a dynamic and unfolding object of knowledge in Learning studies. The process of analyzing and describing different aspects of the learning object – in pre- and post-tests as well as when analyzing the research lessons – results in knowledge about what it means to know what is expected to be known. I will give some examples of how such knowings can be analyzed and described.</p>

	<p>Challenges of the Teacher-Researcher in a Learning Study (<i>Anja Thorsten, Linköping University, Sweden</i>)</p> <p>Patrik Johansson, Globala gymnasiet, Stockholm Sweden Learning study is an interventionist, iterative and collaborative approach, focusing on the teaching of an object of learning. It has been used for various purposes. One, which is explored in this presentation, has been to generate knowledge about how an object of learning is best taught.</p> <p>The aim is to discuss the experiences of the teacher who is engaged in doing research with Learning Study as the method. The discussion is based on two studies, one about creative writing in primary school and one about historical primary source analysis in upper secondary school. The possibilities and challenges of the teacher-researcher (who conduct research with fellow teachers) will be examined based on the following themes: a) to create and focus on research questions b) to use and develop theories c) to see the classroom as a source for collecting data d) to use your teaching experience as a resource and e) to create generalizable and transparent results.</p> <p>The presentation will contribute to insights and knowledge about advantages, as well as hindrances to overcome, for teacher-researchers who use Learning Study as a research method. The content can also be related to performing action research in teachers' classroom practice.</p> <p>Researching Pedagogical Content Knowledge through Learning Study. Combining Theories of Learning in Analyzing an Object of Learning through Students' Conceptions and Classroom Practice (<i>Malin Tväråna, Stockholm University, Sweden</i>)</p> <p>Through the use of explicit theories in the design and analysis of teaching, Learning study can be used to generate theory-based and theory-generating results, which are possible to evaluate in a systematic way. The aim of this presentation is to discuss in what way, and to what purpose, theories of teaching and learning can be used in a Learning study, as well as what the characteristics are of those theories of teaching and learning that can be used for different purposes in Learning study. A study that explores qualitative differences in upper secondary school students' conceptions of justice, in the subject of civics (Tväråna, 2014), is used to illustrate how a deeper knowledge of students' conceptions of a specific subject content can be explored using phenomenography (Marton, 2014; Marton & Pong, 2005). The study is based on empirical data from seven interviews and written pre- and post-tests as well as recorded and transcribed material from nine research lessons in three Learning Studies. The study</p>
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	analyses students' conceptions of justice, as well as students' experiences of what it means to reason in civics.
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Presentation Code	11a
Title	Lesson Study as a Boundary Object in Initial Teacher Education
Presenter/s	Sui Lin Goei
Affiliations	VU University (Amsterdam)
Type of presentation	Paper presentation
Strand	Further and Higher Education
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Queen's Lecture Theatre 2)
Abstract	<p>A well-known problem in initial teacher education is the gap between theory and practice. Students find it hard to transfer theory to their internships. Problems regarding to transferring knowledge are: knowledge is possessed by individuals, activities ask for recontextualization in specific situations and transfer is seen as a one-way-road, which contrasts with the vision that learning is a social matter. Therefore, the one-way individual task-based interpretation of transfer is often replaced by boundary crossing (Bakker, Zitter, Beusaert & De Bruyn, 2016).</p> <p>Boundary crossing implicates a two-way-road which focuses on collective learning processes in activity systems. Borders are social and cultural differences between practices which lead to problems in actions or in interactions with other practices (Akkerman & Bakker, 2011), but can have great learning potential. Crossing boundaries forces participants to reconsider their look at practices and assumptions and can be a source of deep learning. By questioning existing practices, activity systems can be transformed. A boundary object is a concrete object or activity which has meaning and ownership in both systems and facilitates a meaningful dialogue between stakeholders from both activity systems, which leads to expansive learning within those activity systems (Snoek, Enthoven, Kessels, & Volman, 2015). Our question is: Can Lesson Study function as a boundary object to bring theory and practice closer together?</p> <p>Semi-structured interviews were conducted with seven student teachers of the initial teacher education for secondary education who were part of Professional Learning Communities where Lesson Studies were conducted with starting and experienced teachers. The answers of the students were analysed looking at the three characteristics of boundary objects: meaningfulness to the student, ownership and dialogue (Snoek, Bekebrede, Hanna, Creton, Edzes, 2016). Furthermore, the students were asked about the benefits of</p>

	<p>Lesson Study and whether they recognised the following four: intensive collaboration and practical exchange between team members, new perspective on pupils, investigative approach and deepening of and reflection on pedagogical knowledge.</p> <p>Preliminary results showed a focus on deepening of and reflection on pedagogical knowledge, a new perspective on pupils and the investigative approach were barely mentioned. However students highly appreciated meaningfulness and ownership of Lesson Study and the dialogue and collaboration with more experienced teachers.</p>
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Presentation Code	11b
Title	A Lesson Study on Process Writing and Peer-assessment in Teacher Education
Presenter/s	Claudia Mewald, Elisabeth Weitz-Polydoros and Sabine Wallner
Affiliations	University College of Teacher Education (Austria)
Type of presentation	Paper presentation
Strand	Further and Higher Education
Time/ Location	Saturday 3 rd Sept. 13:00-14:30pm (Queen's Lecture Theatre 2)
Abstract	<p>This presentation discusses the implementation of process-writing and peer-assessment in the context of three courses in teacher education: young adult literature, methodology and language skills. The primary aim of the study was to learn about the effects of the approach on language and content learning, as well as the trainees' gains in their assessment literacy. The course tutors will discuss how a process of Lesson Study was employed to study three cohorts in three rounds between 2013 and 2016. For the LS the course tutors developed a process-writing framework. This included face-to-face meetings with the complete study group, on-line collaboration in professional learning communities consisting of three trainees and two tutors and an on-line survey. Each cohort went through five cycles of process-writing and peer-evaluation. The tutors and trainees used the same assessment scale and gave verbal comments during the feedback process. Moreover, they created a collaborative process and product evaluation. The results suggest that trainees produce more accurate and coherent texts and become familiar with the implementation of an assessment scale. However, the LS showed that the trainees did not become sufficiently assessment literate. They could provide</p>

	<p>assessment with a criterion-oriented scale but did not manage to provide the kind of verbal feedback the trainees had appreciated receiving from their tutors according to the on-line surveys. Thus, a claim is made for a stronger and more frequent integration of content, language and practical studies in teacher education so that a more solid pedagogical content knowledge on formative assessment for language learning can be established.</p>
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Presentation Code	11c
Title	The Renewal of the Teacher Training Program, and Changes in the Reflections of Student Teachers in the Descriptions Provided in their Journals during Teaching Practice
Presenter/s	Hironori Sasaki
Affiliations	Chugokugakuen University (Japan)
Type of presentation	Paper presentation
Strand	Further and Higher Education
Time/ Location	Saturday 3 rd Sept. 13:00-14:30pm (Queen's Lecture Theatre 2)
Abstract	<p>The faculty teacher training course, which the author of this article belongs to, was looking for a model of a “teacher as a professional”. After the discussion among faculty staff, a model of a “reflective practitioner” was introduced in 2014. Consequently, the faculty staff developed the faculty teacher training program which consisted of 15 lessons for 3rd grade student teachers. The descriptions from the journals that 28 student teachers wrote during teaching practice in 2014 were analyzed. The descriptions were assumed to indicate the reflective thinking of the student teachers during teaching practice. The descriptions were sorted based on a preliminarily set of three categories. These were time and place, method of reflection, and level of reflection. As a result, it was revealed that there were a lot of abstract and general reflections in the journals and many of the descriptions had not reached the level of "critical reflection". Finally, it was clarified that the teacher training course should be modified to help the student teachers to reflect on their practice more deeply and to explore their own solutions.</p> <p>In 2015, the faculty staff modified the format of the journal and the program. At first, the headers of the record were changed. For example, from “the record of the lessons, describe what you became aware of , what you were impressed with, and any questions you may have had” to “the record of reflection from the viewpoints of subject teaching, student guidance and management”. Secondly, what made a reflective practitioner was emphasized even more in the lessons. Thirdly, learning how to describe the reflection in the journal was accented. 29 students completed the program and the student teaching for four weeks that year. The descriptions from the journals of 29 student teachers were sorted based on three categories that were also used in 2014. The numbers of each classification were compared. As a result, the numbers of abstract and general reflections in the journals were fewer. The number of the descriptions of critical reflection increased, and the amount of technical reflection was less. Therefore it was revealed that student teachers were able to reflect on their practice more deeply. Finally, it was suggested that the</p>

	renewal program could help the student teachers to reflect more effectively and explore their own solutions.
Presentation Code	1J
Title	Developing Professional Learning Communities: Models and Practices: West Lodge Primary School
Presenter/s	Ian Bennett and Jim Dees
Affiliations	West Lodge Primary School (United Kingdom)
Type of presentation	Symposium
Strand	Developing professional learning communities: models and practices
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Blue)
Abstract	<p>'The professional learning community model flows from the assumption that the core mission of formal education is not simply to ensure that students are taught but to ensure that they learn. This simple shift—from a focus on teaching to a focus on learning—has profound implications for schools.'</p> <p>Paper 1: The Beginning of the Journey (<i>Jim Dees</i>)</p> <p>We began lesson study in 2013 as part of a formative assessment action research project. Our journey began with support from an external consultant who, over the academic year, guided us through all aspects of formative assessment. We used Shirley Clarke's book – Active Learning through Formative Assessment as our core text. Teachers began to gain an understanding of how to carry out action research and the impact this could have on the development of their own practice. As part of this project we introduced the concept of Lesson Study and subsequently carried out sixteen lesson studies during the academic year. Each lesson study involved two teachers from different year groups who together, planned lessons based around a formative assessment strategy. Focus pupils were identified in each class and observed during each lesson. Detailed notes were taken on each pupil and findings were presented after each lesson. The focus pupils were interviewed immediately after each lesson. The teachers involved found the process rewarding and enjoyed the dialogue immediately after the lesson and the shift of focus from watching teaching to watching learning. It was powerful to watch the interviews of the focus children. This gave teachers an insight in to what children thought about their learning. This had a significant impact on the school as we began to move towards guiding the children to self-select their own learning with an emphasis on each child gaining a better insight into choosing a challenge appropriate to them, and to enjoy the feeling of being challenged. This all linked to extensive</p>

work that we have done on embedding a growth mind-set. The findings from lesson study then fed into our teaching for learning policy. The project ended with each year group presenting their findings over the year.

Paper 2: Embedding the Learning Culture (*Ian Bennett*)

In 2014/15, we moved to a whole school lesson study approach where all staff took part in at least one lesson study. In this academic year, lesson study was planned within year group teams and focused on areas of formative assessment that were relevant for that year. Each year group came up with a research question which was explored throughout the lesson study and used to form questions asked to the pupils. Teachers enjoyed this opportunity to observe and were able to see the many different ways of approaching the same lesson. It also gave teachers within the year group a better understanding of the varying learning needs of each class, this made planning sharper and more effective. Towards the end of the year we came together as a staff to review our findings. Each year group discussed the impact of their study and how this had moved their children's learning forward. Many teachers commented on not only the children's learning, but of their own learning journey and how working more closely with their year group had made them stronger teachers. In 2015/16, we wanted to develop an approach where lesson study was built around weekly findings of a chosen research area. A CPD session outlined the different areas of study based around Hattie's Visible Learning. The approach to lesson study was refined and opportunities were given to year group leaders to facilitate a session, as well as teach another, giving them more ownership of the process. One Year Group Leader explained: 'It is an opportunity to gain an insight into the learning behaviours of other classes. It has been insightful being able to observe each class and recognise the common traits shared by groups of children. In my role as YGL, I have been able to connect with more pupils and find out their learning styles. This has impacted on the planning by making it more rigorous, meeting the needs of more pupils.' Throughout the year, CPD sessions were provided so that year groups could share their current findings and outline the impact of their chosen area of research. This helped deepen the learning culture as teachers shared ideas on how to further each year group's research topic. Whole school issues became apparent: e.g. improving the quality of pupil talk.

Paper 3: Wider Impact and the Future (*Jim Dees and Ian Bennett*)

Lesson study is now a well-established part of our academic year and is valued by staff and pupils. As we have progressed over the

	<p>last three years we have slowly got closer to developing a workable professional learning community. A major impact has been to really enhance and develop a positive learning culture amongst the staff community. Staff are more prepared to take risks as they explore the nuances of learning; there is an excited buzz of talk in the staff meetings and PPA sessions linked to teaching and learning. This has helped ensure that there is a high level of consistency in approach across the school. This culture of learning has spread beyond staff to parents and governors. Understanding the shift of focus towards children having more autonomy over their learning has been difficult for some parents to grasp. However, they have been on the journey with us and through continued communication of how we have developed this process they have also gained a deeper insight into this learning culture. As we move into the future we see parents and governors becoming an integral cog of a developing professional learning community. We would like to move forward by sharing our approach with other schools and to explore other ways of organising lesson study. One initiative for next year is to develop Lesson Study with support staff and a focus on intervention groups. Also, we hope to work with our local cluster of schools and develop an approach that works across schools. We aim to expand the influence of Lesson Study so that it links more tightly with our appraisal and performance development cycles, putting a greater emphasis on coaching, learning and development.</p>
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Presentation Code	1Ka
Title	Differentiation and Flipping – A Harmonious Match in Mathematics
Presenter/s	Radha Devi Oonnithan
Affiliations	Hai Sing Catholic School (Singapore)
Type of presentation	Paper presentation
Strand	Developing professional learning communities: models and practices
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Forum Seminar Room 1)
Abstract	Some students learn at a slower pace than their peers or they may lack the prior knowledge that they need to understand the concepts presented in class. After the lesson, teachers often assign homework, which many students perform with frustration and confusion. Teachers in turn spend class time going through homework questions and explaining concepts that they think their students may not have understood. Students become passive learners and teachers become the sage on the stage. On the other hand, for the better students the information may come too slowly

	<p>or cover what they already know. For these students who have diligently done their homework, it is a waste of their time too. They have to listen to content that they have already understood and mastered. To handle this problem, Bergmann and Sams (2012) proposed to use the Flipped Classroom Model. Creating teaching resources is essential in a Flipped Classroom Model. Hence, a Professional Learning Team (PLT) of teachers teaching the Upper Secondary classes (15 and 16 year olds), had to decide on the content to be used, the level of difficulty and the duration of the videos. They had to ensure that the resources created were sustainable so that other teachers would be able to use / modify them easily in the future. The video lessons were uploaded to YouTube and students were given QR codes to easily access these videos. They watched the videos at home, and came to class prepared with questions that they wanted to discuss with their peers and teachers. This PLT also designed entrance activities to assess their students' readiness for the lessons. Having a clearer picture on what their students know or do not know enabled the teachers to teach them accordingly. Teachers were able to provide feedback and immediately correct students' misconceptions in class. Such increased opportunities for feedback have improved students' learning because feedback has one of the strongest effect sizes of any instructional practice according to two meta-analyses (Beesley & Aphorp, 2010; Hattie, 2008). Based on students' responses and teachers' observations, some of the video lessons had to be modified. The choice of questions used during the entrance activities had to be tiered based on students' capacity and more scaffolding had to be given for selected students.</p>
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Presentation Code	1Kb
Title	Building Meaningful Learning through the Coherence Learning among Mathematics, Language and Science Lessons in the Secondary School
Presenter/s	Anna Permanasari, Bibin Rubini Rusdi, Turmudi Turmudi, Vismaia Vismaia
Affiliations	Universitas Pendidikan (Indonesia)
Type of presentation	Paper presentation
Strand	Developing professional learning communities: models and practices
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Forum Seminar Room 1)

Abstract	Building coherence between science and other subjects, such as mathematics and language, leads to the meaningful learning. The study was done to investigate how far learning mathematics and language (Indonesian language) on using science themes gives impact to the science literacy of secondary school students. The study was done using quasi experiment and descriptive methods, under collaboration among maths, science, and language teachers and staff researchers (university). The implementation of learning in all of subjects was done by teachers themselves, and researchers enrolled as observers. Learning mathematics and language were held before science. The result shows that learning mathematics and language on using science themes that close to their daily life made learning more meaningful. This is indicated by the increasing of math and language literacy, better than the class without science theme. Moreover, the treatment caused the meaningful learning on science, because they have had the initial understanding about science. This led to the enhancement of science literacy, much better than the control class. The important thing was that teachers felt positive impact of collaboration between teachers such as building togetherness, sharing experience and expertise, and finally giving meaningful learning to student.
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Presentation Code	1Kc
Title	The Object of Learning as an Analytic Tool for the Didactics of Mathematics
Presenter/s	Constanta Olteanu
Affiliations	Linnaeus University (Sweden)
Type of presentation	Paper presentation
Strand	Developing professional learning communities: models and practices
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Forum Seminar Room 1)

Abstract	<p>This paper deals with one prominent topic in the field of mathematics education: the communication in mathematics. In this article, a framework is proposed for analyzing the effectiveness of communication in mathematics classrooms. The presentation is based on data collected, during a 3-year period, and consists of the students' tests, the teachers' lessons plan and reports of the lessons' instructions. In the analysis, concepts relating to variation theory have been used as analytical tools. The success or failure of communication is a matter of the relation between thought contents of speaker and hearer. The analysis focus on the interaction among the intended, enacted and lived objects of learning. The intended object of learning refers to the part of the content that students should learn and which is supposed to be treated in the classroom. The enacted object of learning is what appears in the classroom and refers to what is possible for students to experience within the learning environment. The students' initial level of capability to appropriate the object of learning as well as the way in which students understand the object of learning is the lived object of learning. The interaction among the intended, enacted and lived objects of learning is an indication of whether the communication in the classroom is successful or not. The results show that: effective communication occurs in the classroom if it has the real critical aspects in student learning as its starting point; teachers develop new strategies to present the contents by having the focus to open up dimensions of variation.</p>
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Presentation Code	1Ma
Title	Improving Continuous Writing in an Upper Primary English Language Classroom :A Case Study in Singapore
Presenter/s	Intan Salwah Badiuzzaman, Yeo Mui Poh, Lu Mei Lee, Sapiah Bte Samsudin and Nurul Huda Bte Misman
Affiliations	Teck Whye Primary School (Singapore) Ministry of Education
Type of presentation	Paper presentation
Strand	Lesson study in different cultural, subject and learning contexts
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Peter Chalk Rm 4: 2.4-2.6)
Abstract	<p>Improving Continuous Writing in an Upper Primary English Language Classroom ~ A case study in Singapore In 2012, the Ministry of Education announced changes to the English Language (EL) examination format. It led to a revised</p>

	<p>Primary 4 assessment plan in 2013 and a makeover for the English Language Primary School Leaving Examination (PSLE) format which took effect in 2015. The changes reflect an increased focus on pupils' scope for interpretation and personal response in both speaking and writing.</p> <p>The underlying principle governing the changes rests on the need to prepare our students for life and work in the 21st century. The 2010 EL Syllabus was designed to empower our students in becoming confident and effective communicators who are independent as well as self-directed learners.</p> <p>The main aim of this study is to investigate the use of a thinking routine "Generate – Sort – Connect – Elaborate" to help students generate ideas which will then be used to write a fully-developed composition based on a theme. The use of ICT via padlets was also introduced. This allowed the students to share their ideas on a common platform, which enabled teachers to monitor their understanding and address any concerns, if any, immediately.</p> <p>The investigation is carried out in a primary school involving 38 Primary 5 students and 6 Upper Primary EL teachers. The teachers crafted a professional learning goal and planned a lesson collaboratively, with anticipation of the students' responses to a given stimulus and theme. Thereafter, a research lesson was conducted by one of the teachers. The rest played the role of observers. A post-lesson discussion was conducted to analyse the students' responses and write-up.</p> <p>The preliminary findings show positive impact as a result of using such a structured approach. The students demonstrated ability to generate ideas based on a given stimulus, bearing in mind the text features of narratives and personal recounts. The students sorted the various ideas into different categories and then connected the ideas (from various categories) to make sentences. They then proceeded to elaborate on one aspect of the story (climax) using Expand-The-Moment (ETM) focusing on Show-NOT-Tell by incorporating thoughts and feelings.</p> <p>Such findings would be a useful guide for EL teachers who may require a more structured approach to help students improve their writing skills. The presentation will include numerous photographs, samples of students' work and/or video clips of the research lesson.</p>
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Presentation Code	1Mb
Title	TBLA is a Method to Measurement of Students' Participation in lesson: In Case of Mathematics Lessons in Mongolia
Presenter/s	Ganbaatar Tumurbaatar and Dulamjav Norjin
Affiliations	Mongolian National University of Education (Mongolia) School of Mathematics and Natural Sciences
Type of presentation	Paper presentation
Strand	Lesson study in different cultural, subject and learning contexts
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Peter Chalk Rm 4: 2.4-2.6)
Abstract	<p>Quality of education depends on the quality of the lesson. So questions appear that, how we compare good and not good lessons? Researchers defined many different definitions about lesson quality. Aim of elementary and secondary education is based on concepts for development of every child, in Mongolia. For this concepts, one basic criteria for good lesson is students' participation in the lesson. So, how we measure students participation in the lesson? Is there a measurement tool for students' participation? This paper presents the results of our research about used Transcript Based Lesson Analysis as a method for students' participation in case of mathematics lesson.</p> <p>Lesson analysis is method for analysis and reflection of the lesson based on the transcription (Matoba, 2007), lesson analysis is a way for sharing values of the lesson (Kuno, 2012). That is a reason why we chose TBLA as a method to measurement of students' participation in lesson.</p> <p>The Institute of Teacher Professional Development (ITPD) of Mongolia collects best lesson videos form each schools every year. Teachers send the best lessons, shows of their good practices for teaching and learning methodology. And ITPD put some criteria for their lessons and choose which are good practices and lessons. So, we have lot of video lessons for each subject of elementary and secondary schools. We choose some mathematics lessons and transcript them, and used it to collect data of our research.</p> <p>We used some quantitative and qualitative research methods for this data and it claimed that students' participation is not to enough level in Mongolian mathematics lessons. Also we can conclude Lesson analysis is not only analyze and reflection of the lesson, but for measuring students' participation in the lesson. At the same time we did collect some training materials (good lesson videos, transcripts by words and case analysis) for develop teachers skills and to understand how to increase students' participation in the lesson. That is practical results of our research.</p> <p>We need to use TBLA as a method for measurement of students' participation for any other subjects and compare results.</p>

Presentation Code	1Mc
Title	Teacher Distance Learning Programme as a Tool for Embedding LS as a Staff Development Training Model Approach in the Republic of Kazakhstan
Presenter/s	Liliya Zhurba
Affiliations	Centre of Excellence (Kazakhstan) The Department of Methodological Work
Type of presentation	Paper presentation
Strand	Lesson study in different cultural, subject and learning contexts
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Peter Chalk Rm 4: 2.4-2.6)
Abstract	<p>In Kazakhstani schools Lesson Study has become an effective teacher professional-development practice. The approach was first introduced to Kazakhstani teachers in 2012 within the framework of the in-service teacher- training programme initiated by the Centre of Excellence AEO Nazarbayev Intellectual Schools. However, the position of trainers engaged in the programme is not restricted to introducing teachers to the concept of Lesson Study. The trainers are supposed to provide post-course support as external advisors for those teachers, who initiate Lesson Study in their schools.</p> <p>This presentation describes a form of post-course support which meets the needs of Kazakhstani teachers. The post-course support is provided via a Teacher Distance- Learning Programme. This is aimed at the practical implementation of the important idea of formative assessment in learning and teaching. The Teacher Distant-Learning Programme has been developed by the teacher-trainers from the Centre of Excellence at Kokshetau.</p> <p>Lesson Study has been chosen as the main tool by means of which a variety of formative-assessment methods are implemented in school practice. Lesson Study is embedded in the Distance-Learning Programme through the following steps, which are described more fully in the remainder of the presentation:</p> <ol style="list-style-type: none"> 1. Teacher-Leaders take part in webinars organized by the regional teacher- trainers 2. In the course of each webinar, Teacher-Leaders are given tasks. These are aimed at the effective implementation of particular aspects of formative assessment in the teaching practice of colleagues through organizing a Lesson Study process 3. Teacher leaders collect evidence of Lesson Study effectiveness (e.g. observation sheets, video and photo materials) and send them to the teacher –trainers. 4. The teacher-trainers take on the role of external advisers,

	providing the Teacher-Leaders with constructive feedback on how to improve the effectiveness of Lesson Study. Their comments are focused on how Formative Assessment should be implemented.
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Presentation Code	1Na
Title	Develop An Actionable Tool to Support Improvement of Research Lessons – A Process Analysis Model from Singapore
Presenter/s	Yanping Fang and Xiong Wang
Affiliations	Nanyang Technological University (Singapore)
Type of presentation	Paper presentation
Strand	Lesson study in different cultural, subject and learning contexts
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Collaborative)
Abstract	<p>Improvement (Kaizan) is the heart of lesson study driving continuous improvement of classroom practice through teacher collaboration (Fernandez et al, Lewis, 2006; Sarkar Arani, 2006; Stigler & Hiebert, 1999). Data analysis is at the heart of a professional development experience (NEA, 2003), particularly for lesson study. Improving the research lessons requires teachers to develop an eye on children for evidence of their learning during classroom observation and form professional judgment on what and how to fine tune instructional language and resources (Cohen et al, 2003). Yet teachers often find it difficult to provide solid evidences to inform lesson improvement through data collection and analysis (Perry & Lewis, 2008; Fernandez et al. 2003), particularly when it lacks specific and systematic reference frames to guide the decision making in the improvement process. All too often perceptions alone inform decision making rather than relying on evidence gathered systematically and examined in relation to specific, intended goals of lesson study (Zepeda, 2008).</p> <p>To address this difficulty, our research aims to develop a process analysis method which is capable of deriving more sophisticated patterns of whether and how the discourse succeeded in developing the students' understanding by giving meaning to their mathematical experience in an activity (Wells, 1999). Based on two research lessons and their improved lessons on the same topic of equivalent fractions conducted in 2006 and 2007 in a Singapore local primary school, our research aims to understand how the discourse succeeded in developing the students' understanding by giving meaning to their mathematical experience in an activity. We view discourse patterns and meaning construction in our research lessons from Well's dual function of classroom language use mentioned to capture both the "acting" and "understanding" dimensions of the classroom discourse. On one dimension, we aim</p>

	<p>to describe the general trend of classroom behavior embodied by teacher and student talk in content representation as the lessons unfolded. More specifically, we looked at the level of teacher questions and teacher explanations and the corresponding level of student talk in relation to lesson objectives to describe how the classroom discourse functioned in moving successfully or unsuccessfully towards instructional objectives. On the other dimension, we looked into whether there was any construction of meaning going on in each meaningful exchanges when the lesson orchestration moves deeper as the learning activities advanced. A coding scheme was developed along the move level (the smallest building block of discourse) and sequence level (least meaningful exchanges) to quantify the lesson representation of content and lesson orchestration of the mathematical meaning construction. The coding analysis was also juxtaposed with teacher interview data and observation field notes to substantiate the findings. This analysis model holds potential to provide solid case data to inform teachers what needs to improve, how to improve them, why the improving act is reasonable. It also helps to verify and reflect on how lesson study mechanism improves and change instructional practice. Moreover, with process analysis, we aim to build a reference framework and an investigative tool for teachers to gauge their investigations (Perry et al., 2009). Ultimately this analysis model is hoped to serve as an instrument to evaluate quality of lesson study practice as professional development for teachers.</p>
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Presentation Code	1Nb
Title	Lesson Study at the Foreign Language Level: A Cross-Cultural Collaborative E-Learning Project Between Australia and Japan
Presenter/s	Bruce Lander
Affiliations	Matsuyama University (Japan)
Type of presentation	Paper presentation
Strand	Lesson study in different cultural, subject and learning contexts
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Collaborative)

Abstract	<p>The attributes that lesson study can provide the educational community are boundless, especially in the modern era of ICT and immersion of technology in education. Lesson study is gaining huge popularity the world over for being a pedagogical theory that aids professional development and encourages teachers to learn from each other to further develop their teaching techniques. In the modern era of today, technology provides more opportunities than ever before to work collaboratively, collectively and internationally despite being in completely different geographical locations. The practice of lesson study has a widespread following at the primary level of education in Japan, where it was first founded (Takahashi, Lewis and Perry, 2013) and now is accepted as an internationally coveted pedagogy.</p> <p>More recently the theory of LS has seen an increased interest at various levels of education worldwide. However, there is as yet little research at the tertiary level in Japan and even less in foreign language education.</p> <p>This paper presentation will introduce an e-learning collaborative project involving students, teachers and researchers at 5 locations in Australia and Japan. Students were trained by local instructors to create cultural eBooks that introduce local and domestic culture in a foreign language. The Japanese based students did this mainly in English, while their Australian counterparts do this mainly in Japanese.</p> <p>There are several educational circles involved in this study. Firstly, there is the student group consisting of 200 students ranging in age from 13-16 from 5 schools at 4 locations in Japan and 5 schools from one location in Australia. This group was subdivided into classes of approximately 20 students each and instructed by one teacher per group. Secondly, there is a group of 10 teachers, 5 from the Japan side and 5 from the Australian side. Finally, there are 6 coordinators of this project at the tertiary level who guide and support teachers with the technology. This project was led by two teacher trainers from the faculty of education at the University of Western Australia.</p> <p>This presentation will describe the PDCA cycle that was necessary in the construction of this intercultural, collaborative project and indicate issues that arose during the process. This study should be of interest to educators interested in integrating more technology into their classes and how to make a collaborative project like this one a success.</p>
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Presentation Code	1Nc
Title	Analysis and Interpretation of Lessons with the Collaboration between University and School: Historical Approach to the Lesson Study in Japan and a Case Study for the Integrated Perspectives
Presenter/s	Nariakira Yoshida, Nami Matsuo, Mitsuru Matsuda, Yuchiro Sato
Affiliations	Hiroshima University (Japan)
Type of presentation	Paper presentation
Strand	Lesson study in different cultural, subject and learning contexts
Time/ Location	Saturday 3 rd September 13:00-14:30pm (Newman Collaborative)
Abstract	<p>The purpose of this study is to clarify the concept of “Lessons”, which have been developed through post-war movement of Lesson Studies in Japan, focus on the methodologies of analysis and interpretation of the lessons. When we analyze or interpret the lessons, we must select the methods and objects depending on our concept of “lessons”. For instance, if we try to analyze what is learned by children based on what they to learn about the constitution of the subject contents, our methods must be reflected our concept which attaches importance to “study of subject matter”. Adversely, if we emphasis the aspect of the “Lessons” as interactive group processes between teacher and children, we must try to see their concrete accumulation of conversation — actions and reactions — and their relationship in our Lesson Analysis.</p> <p>The “Joint Research of Lesson studies between five universities and schools” had contributed to develop the concept of “Lessons” in Japan. There were major five universities which had led Lesson Studies from 1962 to 1985. And those five universities developed each unique methodology of analysis and interpretation of lessons through the collaborative researches with each partnered schools.</p> <p>Hokkaido University with Toro Elementary School: “jugyou-syo Houshiki” (class report book method), Tokyo University with Shima Elementary School: Lesson Study as science, Nagoya University with Ando Elementary School: “R. R. (Relativistic Relation Research) Method” and “Kodomo no Mitori” (interpreting children’s learning), Kobe University with Sugano Elementary School: “Kaihou Kyouiku”(liberation education) and “Douwa Kyouiku”(social integration education), Hiroshima University with Mori Elementary School and Kamogawa Junior High School: “Group Process” in the Lesson. The researchers of those universities had presented their research results and practical reports, then their actions accelerating the movement of the Lesson Study. Actually those movements gave the impact on the development of the concept of “Lessons” after that.</p> <p>Research result is to point out that methodologies of analysis and interpretation of lessons by reviewing the characteristics of the</p>

	<p>“Joint Research of Lesson studies between five universities and schools” present “cognition-process and collective-process” , “combination of science and life”, “relation between the one Child and the classroom as community” in lessons as the concept of “Lessons”. And we suggest a new methodology using a case study of Lesson study which aims at integrating the six perspectives, Lesson Study in Japan. Hiroshima: Keisuisha, p. 256-341), “Teaching Material-Oriented Approach”, “Child-Centered Approach”, “Group Formation based Approach”, “Objective-Based Approach”, “Method-Focused Approach”, “An Approach Based on the Way of Life”, for the lesson planning.</p>
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