



# NCETM

The National Centre for Excellence in the Teaching of Mathematics (NCETM) was set up by the Government in response to a specific recommendation in Professor Adrian Smith's report *Making Mathematics Count*.

Aims to facilitate, enhance and provide leadership for all aspects of CPD for mathematics teachers in schools (primary and secondary) and colleges in England.



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## Where are we based?

The NCETM is a virtual centre but its main 'real' contacts are at: -

St Mary's Court,  
55 St Mary's Road  
Sheffield, S2 4AN

CIMT,  
Douglas Avenue,  
Exmouth, EX8 2AT

**[www.ncetm.org.uk](http://www.ncetm.org.uk)**



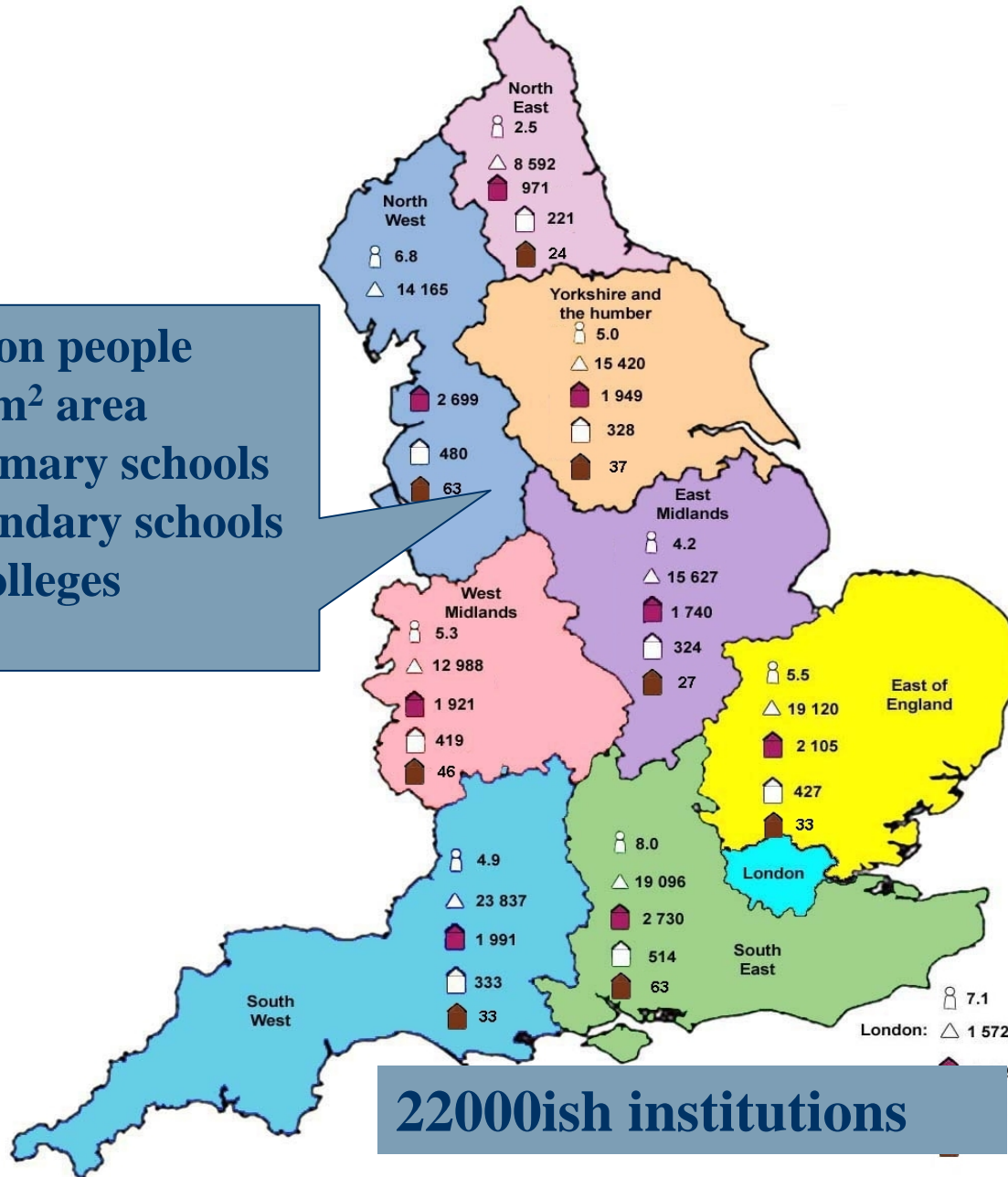
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## NCETM Core Staff

- Director
- Assistant Directors for
  - HE Liaison
  - FE Liaison
  - Schools
  - Research
- Special Advisers to the Director (2)
- Project manager
- Marketing and communications manager
- Web portal developers
- 
- Regional structure, based on the 9 Government regions with local networks, hubs of schools and colleges in each region
- Regional coordinator and part-time assistants



**6.8 million people**  
**14165 km<sup>2</sup> area**  
**2699 primary schools**  
**480 secondary schools**  
**63 FE colleges**





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# NCETM Focus of Activities

1. Enhance CPD opportunities for all teachers of mathematics by providing information for CPD courses and training resources
2. Encourage international links
3. Support subject knowledge enhancement for all sectors
4. Above all, encourage and promote (but not dictate)  
**collaborative practice and networking**  
in schools and colleges
5. Work with professional organisations and TDA and SSAT to establish a CPD framework for mathematics, possibly embracing the concept of *Chartered Mathematics Teacher Status*



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## NCETM Web Portal

- Access to web portal free but teachers need to register to go beyond information and resources
- Information about courses, events and research will be available at regional, national and international level and kite marked where appropriate
- Resources for teaching and training will be featured
- Links to existing quality resources and information will be provided, indexed and evaluated
- Communities of teachers can be supported
- Every mathematics teacher will be able to have their own e-portfolio which can be used for resources, lesson plans, information and evidence of progress; information can be shared or kept for individual use
- Discussion forums



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# Collaborative Practice for Continuous Professional Development



“Teachers tell us that the development activities that have most impact on their classroom practice are:

- Opportunities to learn from and with other teachers in their own or other school
- Observing colleagues and discussing teaching with them
- through working together on real school improvement problems, drawing on best practice
- taking part in coaching or mentoring programmes”

DfES (2005) Leading and Coordinating CPD in Secondary Schools



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# Collaborative Practice Model

- A group of teachers plan, observe and/or video lessons from each member of the group, regularly (and frequently)
- Time is made available for group review after each lesson, chaired by one of the group ('expert maths teacher') or external input, in which the teacher first gives their own evaluation followed by discussion with other members of the group
- Priorities for action suggested by the chair in consultation with the teacher and others
- Based on research into models of collaborative practice in Eastern European countries, Japan (Lesson study) and USA and supported by NCSL, NERF.
- This is NOT appraisal but is based on professionals working together to share good practice

# Lesson Study from Japan



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- Choose the research theme
- Collaboratively plan the research lesson
- Observe the lesson and reflect as a group on pupil responses with external expert (e.g. teacher trainer)
- Revise lesson plan
- Repeat the process

# Lesson Study from Japan



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- Typically 4-6 teachers + 1 “outside expert”
- 2 or 3 lessons per year
- A cyclical process that can last for 2 or 3 years



**We are not advocating or promoting the Japanese model – or indeed any particular model – but we are suggesting some key protocols that need to be agreed, within an institution, for collaborative practice to be effective.**

# Protocols to be agreed and established



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- 1) What do we want teachers and pupils to gain from it?
- 2) Collaborative Practice CPD should not be confused with monitoring and appraisal.
- 3) Teachers decide on the focus for each lesson.
- 4) Everyone observing take notes during the lesson (to aid them during the review session)
- 5) During the feedback:
  - a) All present give reviews.
  - b) One person leads the ensuing discussion.
  - c) The lesson summary sheet is completed including agreed action points for the future, and copied to all staff involved.
- 6) Planning, observation and feedback sessions should be built into the timetable.

# Outcomes



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What sort of focuses might emerge from the process?

Possible focus on:

- planning
- classroom management
- questioning techniques
- effective monitoring of pupil progress
- use of ICT and resources
- use of teaching assistants
- pupils working in front of the class
- mathematics subject knowledge
- pace and variety of activities
- etc...



## Useful web sites for collaborative practice

- EPPI-Centre reviews [www.eppi.ioe.ac.uk](http://www.eppi.ioe.ac.uk)
- NCSL [www.ncsl.org.uk](http://www.ncsl.org.uk)
- Pathfinders [www.cimt.plymouth.ac.uk/pathfinders/](http://www.cimt.plymouth.ac.uk/pathfinders/)
- NERF reviews [www.nerf-uk.org/bulletin/?version=1](http://www.nerf-uk.org/bulletin/?version=1)
- Lesson Lab (Stigler) [www.lessonlab.com](http://www.lessonlab.com)
- Columbia University [www.tc.columbia.edu/lessonstudy](http://www.tc.columbia.edu/lessonstudy)
- Lesson Study (Lewis) [www.lessonresearch.net](http://www.lessonresearch.net)
- New Mexico [www.mathstar.nmsu.edu/lesson\\_study/](http://www.mathstar.nmsu.edu/lesson_study/)



Issue	Suggested solutions
Finding time and opportunity to plan, observe and review together	<ul style="list-style-type: none"><li>• Teachers plan alone</li><li>• Use 'published plans'</li><li>• Use PPA time</li><li>• Divide team into sub-groups</li><li>• Video lessons</li><li>• 'Double up' classes</li><li>• Buy in supply cover with money saved on external INSET courses</li><li>• Reciprocation with other teams</li></ul>

**Support of SMT is crucial**



## Case Study 1

At this secondary school the model was originally envisaged as taking place once per term because of the problems associated with covering colleagues to observe a lesson. Acknowledging that this was insufficient to give the process momentum, the HoD has now: -

- split the department of seven into two groups so that less cover is needed at any one time and combining classes is less demanding;

- started to video the lessons so that other teachers need not be physically present;

- made the collaborative practice model a regular item on the departmental meeting agenda.

\* The lessons are now being videoed by the school's ICT technician so that no cover is required for observations.



## Case Study 2

Teachers at this primary school are paired within a year group. They plan a lesson together – along with an external consultant (CIMT based) – and then teach it while being observed by the external consultant (this could, equally well, be the head teacher or subject coordinator). Time is freed up by either the Head taking one of the classes or by using outside specialist subject teachers e.g. Music or PE. The two teachers and observer meet to review the lesson, talking about what went well and what did not and set some targets for future development. The teachers involved so far have been confident – even enthusiastic – to report back to the whole staff on the process. This is being extended with a larger group of teachers from different age classes.



## Case Study 3

Each member of the department at this secondary school in has one protected CPD period every week, in addition to PPA time.

The department is split into three groups (two threes and one pair) for the collaborative practice model. In a week when an observation takes place during the CPD period, staff give up their PPA time for review and discussion but use the next CPD period as PPA time.

There is one observation in the department every fortnight (one per six weeks for each group).



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# NCETM Pathfinder Schools and Colleges

- Aims to see how best to implement and adapt collaborative practice models and networking between schools and colleges
- Evaluation and possible solutions to problems and issues arising
- Influence the national roll out of the work of the National Centre
- Learn from experience of networking with other schools and colleges
- Opportunities for M level CPD through PPD funding
- Identified through maths advisers, consultants, SSAT, teacher trainers, OfSTED reports, value added data etc but most important of all through observing the quality of teaching



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# NCETM Outcomes

- Provide more opportunities for mathematics teachers to act professionally through sharing good practice and training alongside their teaching
- Create an ethos of trust and professionalism in schools and colleges
- Provide mathematics staff with opportunities to innovate, to be creative and grow professionally
- Retain effective mathematics teachers
- Attract creative and talented people into teaching mathematics