How to be a better mathematics teacher?
The affordances and constraints of professional learning communities in changing classroom practice.

Diane Dalby
University of Nottingham
ALM July 2017
What does it mean to be a ‘better’ teacher?

• Better ‘performance’?
• Greater student satisfaction?
• Increased personal fulfilment?
Professional development

• A process of individual and social change;
• Measures of ‘effectiveness’ are varied
  — Teacher satisfaction with the PD course?
  — Changes in teacher behaviour?
  — Student outcomes?
  (Timperley et al., 2008; Guskey, 2000)
• Theory alone does not change professional practice; (Cochran-Smith & Zeichner, 2005)
Professional knowledge

Professional practice involves ‘know-how’ rather than ‘know-that’. (Winch, 2013)

Three types of knowledge may be involved in professional development:

• Knowledge for practice
• Knowledge in practice
• Knowledge of practice.

(Cochran-Smith and Lytle, 2001; Dana and Yendol-Hoppey, 2008)
Professional learning

Collaborative teacher learning in professional learning communities (PLCs) is widely viewed as a ‘successful’ model for sustainable teacher development.

(OECD, 2013; Horn & Little, 2010; Matos et al., 2009)
Professional learning communities

A community of practice
A group of people informally bound together by mutual engagement, shared experience and passion for a joint enterprise.
(Wenger & Snyder, 2000)

A learning organisation
A school-wide collaborative culture with an orientation towards continuous learning for improvement.
(Senge, 1990)
Features of PLCs

• Shared values
• Collective responsibility
• Collaboration
• Reflection and inquiry
• A focus on group and individual learning
  (Stoll et al., 2006)

Other suggested features:
• The de-privatisation of practice
• A focus on student learning
• Mutual trust and respect.
Case study

• Teachers of mathematics (mainly GCSE and functional mathematics);
• Teaching students from vocational courses in a large Further Education college;
• The teachers are part of a single centralised team and have staff rooms close together;
• The quality and financial performance of the college has been judged as needing improvement.
Teacher case studies

1. What evidence is there of professional learning?
2. What features of a professional learning community are evident?
3. What are the affordances and constraints that exist within this teacher community that might affect classroom practice?
Perceptions of professional development

- A way of working together
- Professional development
- Classroom practice
Affordances and constraints

Measures of performance
Changing environment
Policy changes
Fragmented professional knowledge
Connection to classroom practice

Leadership
A cycle of inquiry for professional learning

CYCLE 1

Discussion based on existing knowledge

Consideration of research evidence

Question to explore through classroom practice

Inquiry in the classroom

Reflection on classroom practice
Spiral of inquiry for professional learning

Cycle 1
- Inquiry in the classroom
- Question to explore through classroom practice
- Consideration of research evidence
- Discussion based on existing knowledge
- Reflection on classroom practice

Cycle 2
- Inquiry in the classroom
- Question to explore through classroom practice
- Consideration of research evidence
- Discussion based on existing knowledge
- Reflection on classroom practice


Thank you!

diane.dalby@nottingham.ac.uk