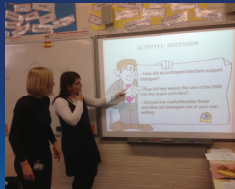


School-based professional development for interactive teaching with technology: lessons learned from initiatives in UK and Africa



Sara Hennessy



<http://tinyurl.com/DialogueIWB>

<http://tinyurl.com/REAL-OER4S>



**SMEC Conference 2016
Dublin**

Outline

- Principles of school-based PD for interactive teaching with digital technology
- UK example: supporting dialogic teaching with IWBs – an impact study
- African example: multimedia professional learning resources for interactive teaching with/without technology, and research trial
- Messages for PD model structure, sustainability and scaling



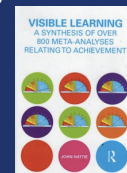
Underpinning principles for school-based PD



Teacher professional development: Meta-analyses

- Overall large effect size (0.62) for professional development – ranked 19/138 factors influencing student achievement by Hattie (2009)

But:



Typically, TPD has taken the form of short-term training designed and delivered by trainers who have not based this training on specific knowledge of what is happening in their trainees' classrooms and for which there is little or no classroom follow-up. (Schwille and Dembélé, 2007, p.33)

Contemporary models of professional learning

- *Ongoing, school-based, community of practice model* – active, experiential learning with/from peers/mentors, classroom implementation
- cycles of reflective practice and critical inquiry
- aligned with curricula and policy
- external stimuli/input? explicitly underpinned by theory
- builds on existing practices and knowledge
- integrates subject knowledge, pedagogy & tool use
- concerns, needs, realities, constraints of teachers, school environment, community and policy makers are taken into account

Contemporary models of professional learning



Teachers are construed as professionals, capable of reflecting on, critiquing and developing their practice, with appropriate support (Hennessy, 2014; Schweisfurth, 2011); teacher agency, leadership and confidence are developed.

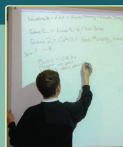
Borko et al., 2010; Cordingley et al., 2003; Guskey, 2002; Hassler et al., forthcoming; Hennessy, Warwick & Mercer, 2011; Hill et al., 2013; King, 2014; OECD, 2011; Timperley, 2007; Twining et al., 2013; Wayne et al., 2008; Wells, 2007; Westbrook et al., 2013; Yoon et al., 2007



Professional development resource for dialogic teaching with technology

Developing Interactive Teaching and Learning Using the IWB

A resource for teachers




Sara Hennessy
Paul Warwick
Lloyd Brown
Diane Rawlins
Caroline Neale



[http://tinyurl/OUPIWB](http://tinyurl.com/OUPIWB)

Teacher development resource



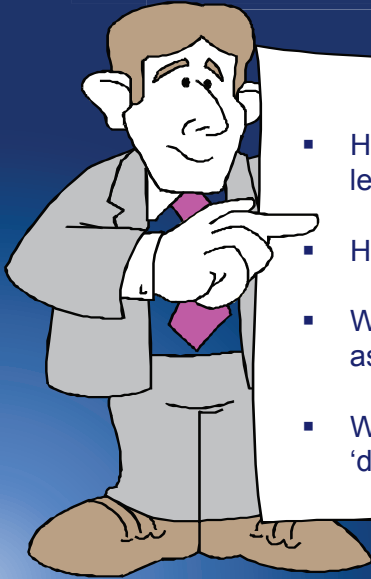
PD workshop materials, photocopiable resources; tasks, lesson planning, Resource Bank of videos, screenshots, flipchart activity templates

Dialogue excerpts & commentaries

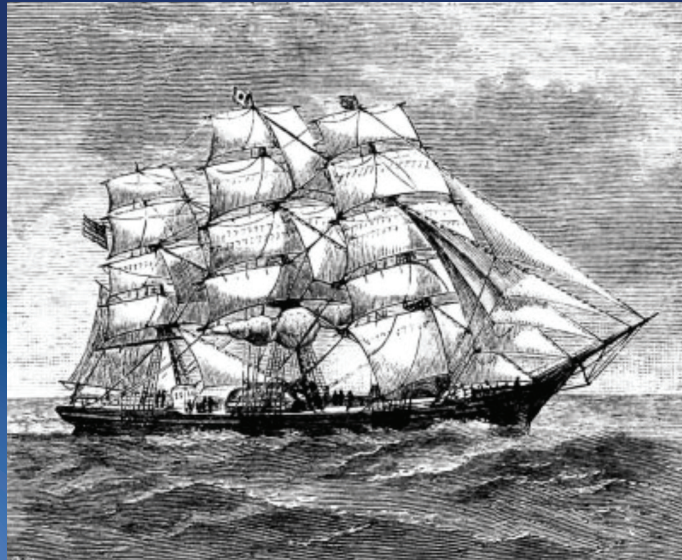
Readings on dialogue, teachers' own case studies

View/critique – Plan – Trial – Reflect – Share...

Discussion: Classroom Talk and Dialogue



- How do you currently use talk in lessons?
- How important is focus on talk?
- What barriers are there to using talk as a tool for learning?
- What do you understand by the term 'dialogic' teaching?



What is educational dialogue? Exploring difference

- A difference between two or more perspectives opens up a dialogic space
- Dialogue is negotiating new meanings in the gap arising between those voices
- So multiple viewpoints can co-exist



(Bahktin 1986; Wegerif 2007)

What does dialogic-teaching-and-learning (Vygotsky 1978) involve?

More than just 'talk':

- teachers and learners respectfully commenting and cumulatively building on each other's ideas
- reasoning; generating, justifying, critically evaluating & synthesising diverse ideas
- posing open questions & speculating
- taking extended turns
- sustaining dialogue across lessons

(Alexander, 2008; Mercer & Howe, 2012; Mercer and Littleton, 2007; Mortimer and Scott, 2003; Rojas-Drummond et al., 2010; Wells, 1999)

Supporting dialogue using technology

E·S·R·C
ECONOMIC
& SOCIAL
RESEARCH
COUNCIL

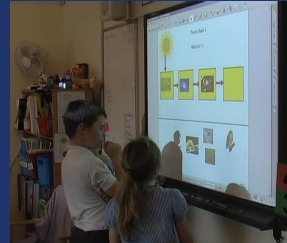


<http://dialogueiwb.educ.cam.ac.uk>

Potential of the interactive display

“We think with and through artefacts”

(Säljö, 1995)



Digital artefacts created by learners and teachers support co-construction by **making reasoning and differences between perspectives more explicit** while understanding develops:

Artefacts are annotated, revisited or critically analysed, negotiated and modified – **in conjunction with talk**

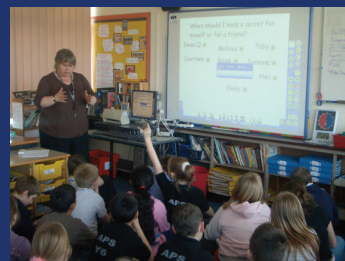
(Hennessy, 2011)

Technology as a cultural resource within a ‘dialogic classroom space’

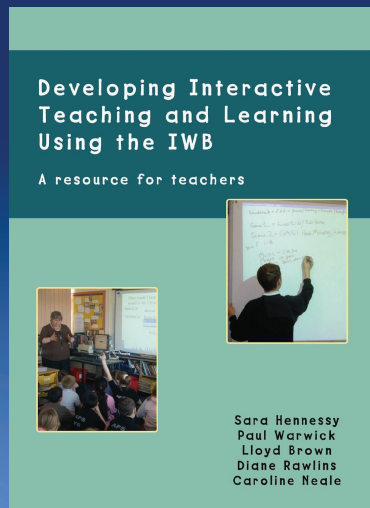
The dialogic teacher creates a **supportive climate** of respect, mutual trust, support for risk taking and trialling of tentative ideas:

a ‘conjecturing atmosphere’ *(Mason 1988)*

Teacher invites and elaborates students’ contributions using digital artefacts as prompts, recording devices etc.



Professional development resource



[http://tinyurl/OUPIWB](http://tinyurl.com/OUPIWB)

Dialogue (audit) table

Using the IWB to support the development of dialogue in the primary classroom

In my classroom, we...	You will see us...
<ul style="list-style-type: none"> ✓ respect, trust and listen to each other ✓ take risks and experiment by trying out new teaching approaches ✓ encourage children to be responsible for their own learning ✓ use good subject knowledge and awareness of our children's needs to help us use children's contributions to advance the dialogue taking place ✓ support children in a range of ways to enable them to share their views and ideas ✓ value talk in our lessons and plan for it to take place ✓ are willing to sometimes change our minds ✓ continue a dialogue over time, from lesson to lesson ✓ use a wide range of IWB features and resources to stimulate, enhance and record aspects of our learning 	<ul style="list-style-type: none"> ✓ sharing, discussing, commenting on and exploring our views and ideas ✓ asking each other questions ✓ showing that we consider other people's views ✓ sometimes trying to reach a shared understanding by building on what people say ✓ giving feedback and responding in a helpful way; being a 'critical friend' ✓ realising what we need or would like to learn and doing something about it! ✓ using what we already know to help us ✓ reasoning and thinking aloud ✓ telling each other what we have learnt when we have been thinking by ourselves ✓ using classroom resources, including the IWB, in different ways to help us in our learning ✓ saying why we agree or disagree with an idea

What role can the technology play?

Drag the images to the correct part of the diagram

Moon Candle Mirror Torch Fish Glow Worm Sun

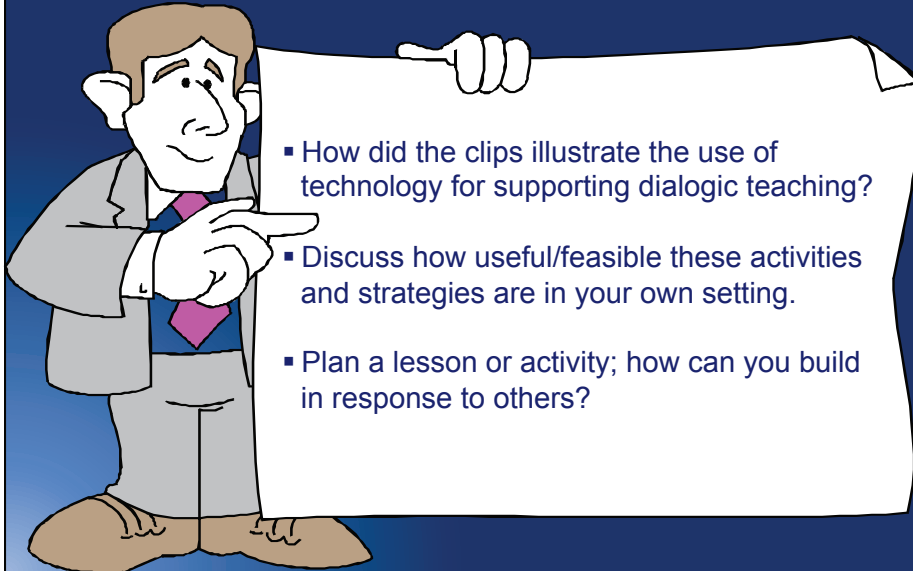
Light Sources Reflectors

both? This one was hard

Collaborative learning in primary science: group work at the IWB (<http://sms.cam.ac.uk/media/1388061>)



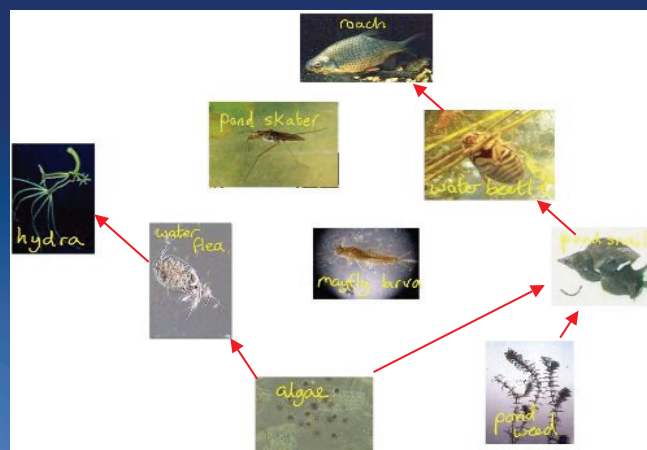
Discussion



A cartoon illustration of a man in a suit pointing towards a large white sheet of paper that contains a list of three discussion points. The background is a dark blue gradient.

- How did the clips illustrate the use of technology for supporting dialogic teaching?
- Discuss how useful/feasible these activities and strategies are in your own setting.
- Plan a lesson or activity; how can you build in response to others?

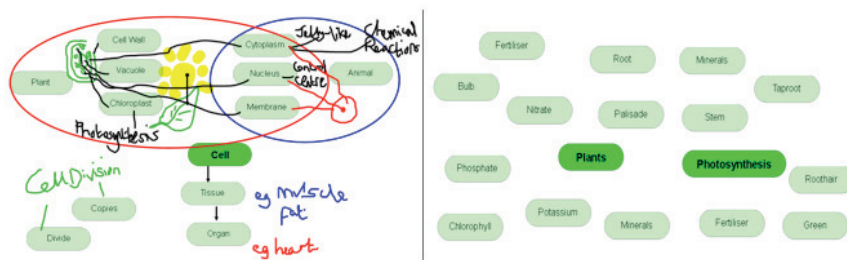
Building in response to others



Resource Bank

Model mapping / mind mapping

Students use key terms and drag and drop words/draw arrows/add text to make connections and explain key ideas about a topic. Results can be saved and added to throughout a lesson/topic of work. Learners could make a mind map at their desks before or during the class activity, or they could do the activity at the beginning and end of a lesson or lesson sequence to illustrate to themselves and the teacher what they have learned. This is especially useful for children with literacy difficulties.



(see Template, 'Mind Map')

Square of truth or magic box/ window: The moon of truth

The moon appears to change shape because it is sometimes in the shadow of the Earth

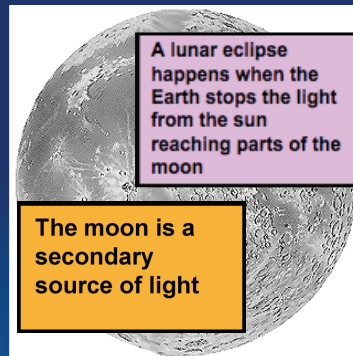


A lunar eclipse happens when the Earth stops the light from the sun reaching parts of the moon

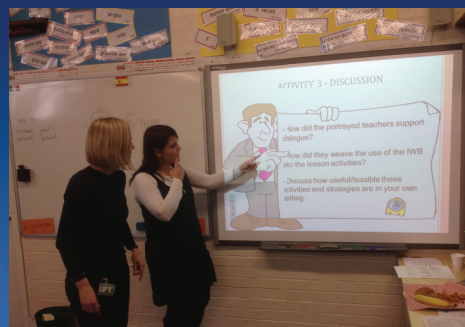
The moon is a secondary source of light

We always see the same side of the moon; this means it doesn't rotate on its own axis

The moon of truth



PD Impact project





Impact Project

- **10 PD workshops:** 2 per school cluster (70 teachers in 14 primary & secondary schools); co-led by 'ambassadors'
- Teachers trialled new approaches in between (2-10 weeks)

<http://dialogueiwb.educ.cam.ac.uk/evaluate/>



Impact Project

Workshop 1:

auditing own practice, viewing & discussing video examples, exploring online 'Resource Bank', lesson planning



Workshop 2:

sharing, reflecting, feeding back on materials developed; viewing further examples; planning for further development and whole school approach

Collecting evidence for impact



Brief **survey**
assessing
baseline

16 **interviews**
with
ambassadors
and teachers

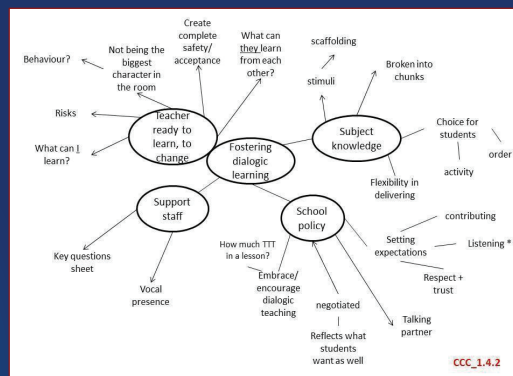
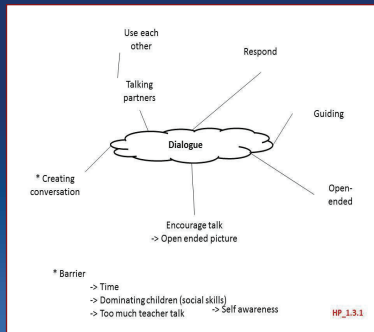
Workshop data:
40 teachers'
posters; audio
recordings,
observation
notes

Teaching
exemplars and
two lesson
observations

Findings 1

- Baseline levels of understanding of dialogue proved low
 - only 19% initially showed medium or strong **understanding of dialogic teaching** (giving concrete examples)
 - Only 13% demonstrated medium or strong understanding of **dialogic teaching with the IWB**; 93% used it mainly for display
- Post-participation interviews (corroborated by posters, Workshop 2 presentations, flipcharts, observations) showed **a clear shift towards stronger understanding**

Teachers' understanding of dialogic teaching at Workshops 1 vs 2



Shift in participants' views of dialogue

'A more layered approach than just classroom talk'; 'giving pupils independence, letting them be their own learners'; being 'much more pupil-led'; 'thinking about how you structure what you're saying, so there's not just one answer'.

It's all about students building a deeper understanding through interrogating each other's talk. (Science teacher)

Where [before] I thought ...maybe dialogue [was] perhaps open questions rather than closed questions, and perhaps the way I speak, I've now realised it's all about students building on each other's thoughts... so that they can contrast their ideas, compare their own ideas ... and build on each other's. (Maths teacher)

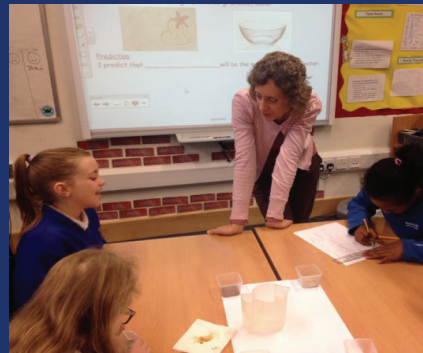
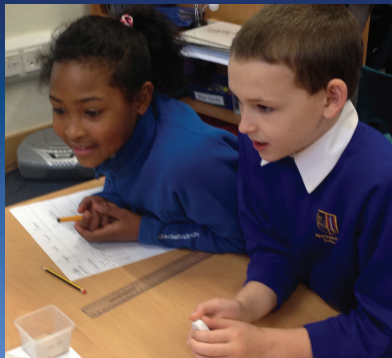
Findings 2

- Genuine shift from IWB as presentation tool towards increased **understanding of possibilities** of tool in supporting a dialogic approach...
- ...**self-reports validated** through capturing concrete examples of **using the IWB dialogically**: 140 files of material contributed to our website.

Findings 3

- **Dialogue about dialogue**: both teachers and ambassadors experienced a dialogic approach to their own professional learning – correlated with dialogicality (cf. Hardman et al 2015)
- Participants felt *they* were learners and co-creators of knowledge

Science lesson observation: Pupils dragging and dropping statements about solubility



Science lesson: Solubility

Creating conditions for dialogue

effective dialogue
top tips for group discussions

- everyone in the group should try to take part
- we all respect each other's ideas
- everyone can give reasons to support their ideas
- everyone can accept that other people may hold a different viewpoint
- everyone can discuss different ideas and views before taking a decision
- the group shares information
- the group tries to reach agreement

Teacher created supportive ethos for dialogue through...

- **Open task:** groups designed experiment using given resources, posed own Qs

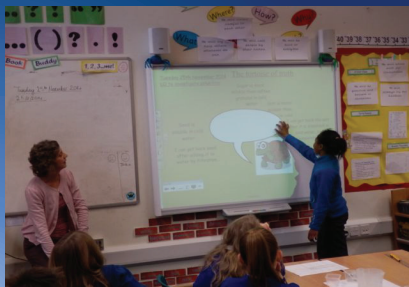


- Encouraging children to build on each other's ideas:
 - Class decided which variables to keep constant (e.g. water quantity) and which to count/measure, made predictions



Encouraging students to articulate and justify their points of view:

- A boy argued that sand cannot dissolve "because the beach is there". Teacher highlighted to the class his link to real life experience



- Whole class interactive IWB activity designed using our template: "tortoise of truth"

Tuesday 25th November 2014 The tortoise of truth
LO to investigate solubility

Sugar is more soluble than coffee granules in cold water

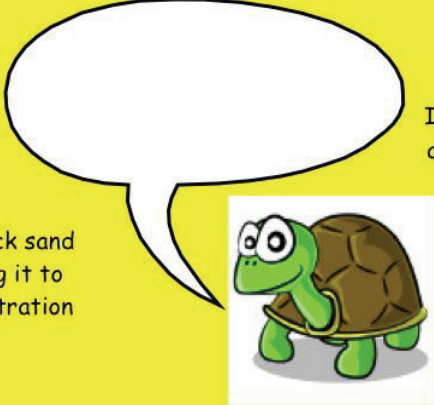
Coffee granules do not dissolve at all in cold water

I can get back sand after adding it to water by filtration

Sand is soluble in cold water


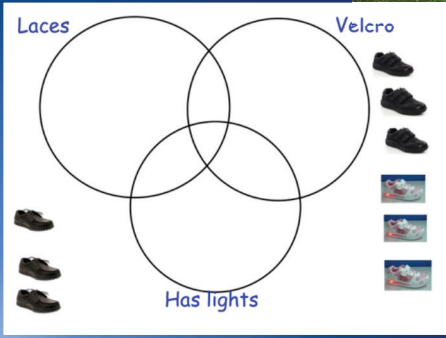
Salt is more soluble than sugar in cold water

I can get back the salt after it is dissolved in cold water, by evaporation



Venn diagrams

Outdoor group work discussing how to categorise shoes

IWB then used to draw class ideas together around similar problem

Findings 3: Ambassadors' Roles

- Ambassadors had pivotal role as both champions and coordinators: organising, ensuring **cascading**, school ownership of programme and widening impact within cluster
- Experienced their own PD from co-leading and co-designing the workshops:
 - developing leadership roles and greater awareness of adult learning processes
 - collegiate sharing and enrichment
 - developing a framework for dialogue

Findings 3: Ambassadors & Clusters

Clusters achieved critical mass and local sharing

But cross-fertilisation remains challenging under teachers' current working conditions.

Logistical challenges:

- **pressures of time** and other commitments
- **coordinating activities across schools** in larger clusters; most participants came from host schools
- careful attention to **timing of workshops** – in school year and school day – to maximise attendance. (Twilight or regular lunchtime sessions as preferred)

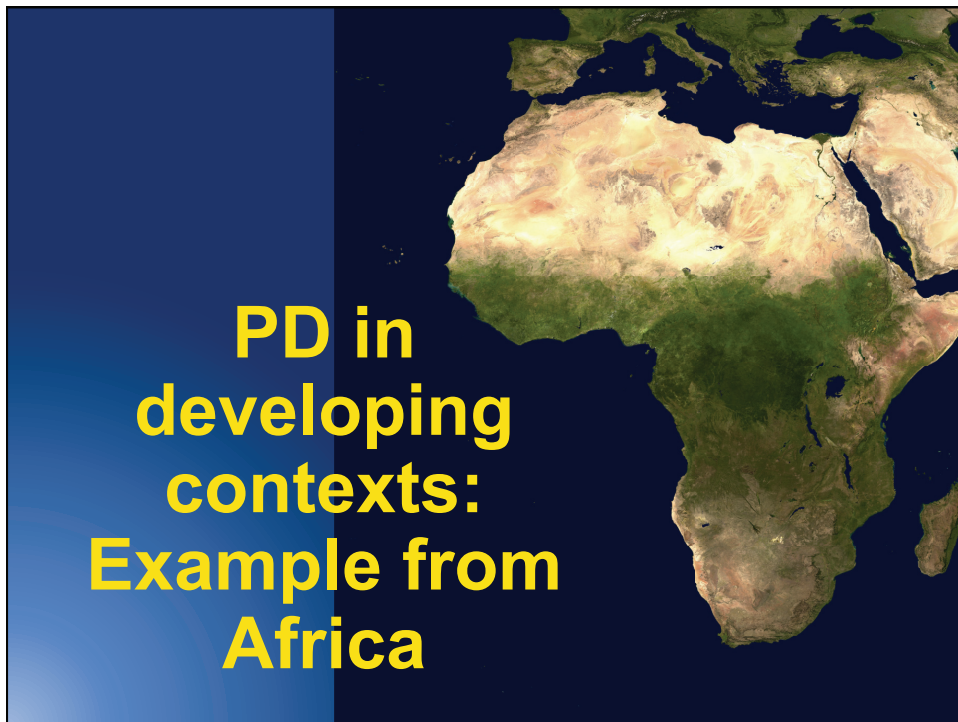
Findings 3: Sustainability

Follow-up actions:

- cross-curriculum activities and whole school PD and policies, eg “encouraging dialogic teaching” and “setting expectations of trust”
- sharing new practices and resources with incoming teachers and at regional TeachMeets
- introducing dialogic teaching supported by IWB as student teachers’ weekly targets
- integrating it as criterion for an outstanding lesson

Future

- Extended measurement of impact, further workshops, more time in between
 - ✓ No counterexamples is encouraging though
- Enhance materials for ambassadors for more autonomous model
- Other technologies: many schools are introducing tablets and other mobile devices; future development could explicitly encompass these new technologies
- more technical support may be beneficial



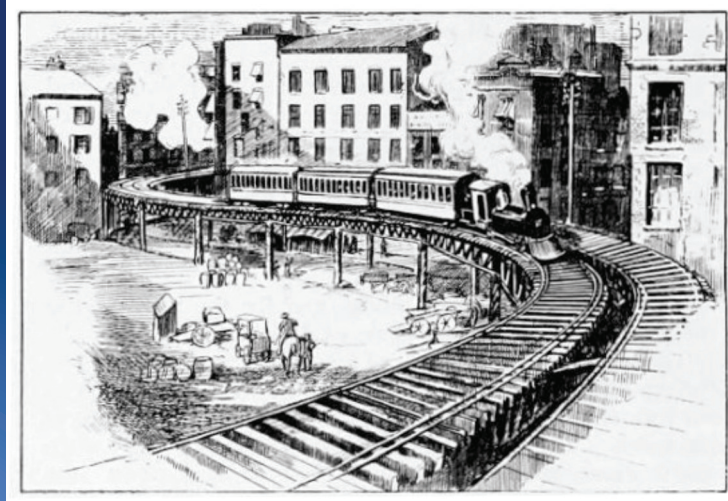
PD in developing contexts

Similar principles of teacher professionalism & leadership:



Rather than trying to “plug gaps” in teacher knowledge, programmes ideally **empower teachers to become reflective practitioners**, able to identify gaps in their own knowledge and skill, and to acquire these as needed (*Hardman et al., 2011*)

Research into PD in sub-Saharan Africa at University of Cambridge (*Hennessy & Hassler*)...

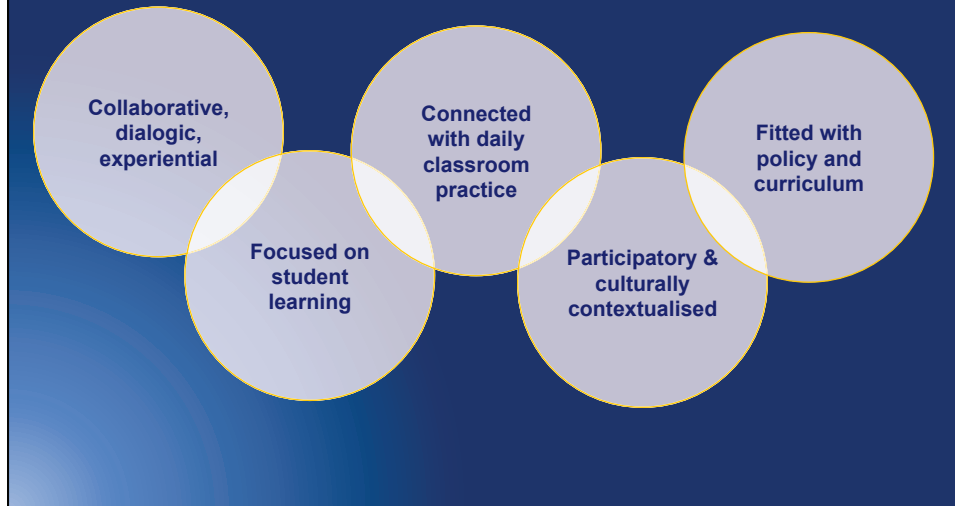


MESSAGES



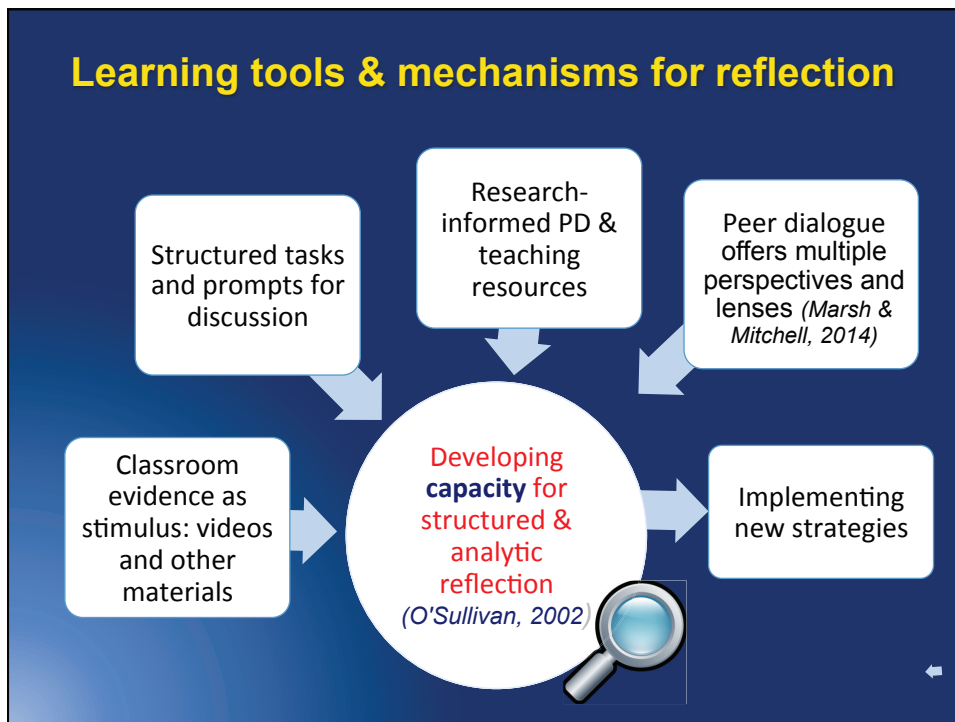
for designing, structuring,
sustaining & scaling PD

What is the optimum PD model?



- Pivotal mechanisms: powerful external stimulus of video and other multimedia materials – not only captures reality and complexity of classrooms...
- but prompts for “guided noticing” (van Es and Sherin, 2008) provide structured opportunities for both critique of others’ practices and critical self-reflection, sensitively challenge existing ideas and beliefs, & encourage Ts to form their own interpretations
- “Seeing”: making pedagogy – thinking & practice – visible (cf. Hattie, 2009); linking observed events to broader principles of teaching and learning

Learning tools & mechanisms for reflection



Research

Developers and policymakers urgently need more rigorous evidence that describes how PD design elements impact the likelihood of program success. This is particularly important as most PD is home-grown; it . . . has a relatively short shelf-life, and proceeds with little or no formal evaluation.

Hill et al. (2013, p. 476)

- measure student learning gains using (quasi-) experimental research designs, but methodological issues: fidelity, isolating causal factors, matching comparison groups, individual teacher variation (PISA: 10x more in-school than between in UK)
- more voices of students

Sustaining & scaling



- Design for this at start
- Materials open & available for re-use in variety of formats – for ITE & PD; OER support lifelong learning
- Meaningful certification; career progression
- Conditions for teacher learning: whole school programme
- Conditions for learning: school leadership support and involvement (?) is important; support not just for attendance, but shared leadership for learning and shared accountability

Scaling

- A degree of cascading is inevitable; the real test of programmes may lie in their ability to be run by others (Wayne et al., 2008; Hill et al., 2013).
- light cascade for facilitator induction (+ ongoing, decreasing facilitator support)
- “upward cascade” of materials: focus on what T does, augmented by built-in facilitator notes, in turn augmented with materials for “key PDLs” (coaches; “master trainers”) on how to run PD for facilitators
- Dialogic workshops: PDLs need to develop active learning / dialogic approaches before they can model them

Tensions in sustaining & scaling

Prescription vs. bottom-up development
(reinvent wheel): semi-structured guidance

Sustain vs. scale! PD leadership as school-based, sustainable & locally contextualised vs. need for ongoing support – semi-supported model offering workshop materials only?

Fidelity vs dilution: explicit workshop plans, clear, built-in facilitator guidance + ongoing support

Tensions in sustaining & scaling

Observing peers vs. strangers vs self: lesson study, videos from other contexts, T-SEDA tool for monitoring own practice & peer observation

Managing unrealistic expectations about ease and speed of change (*Schweisfurth, 2011*)

Technology: potential of ODL versus **unrealistic assumptions** / catering for privileged
(Liyaganawardena et al 2013)

Timetabling of PD: regular, ringfenced teacher group meetings but adaptive structures

If the structure does not permit dialogue, the structure must be changed (Paulo Freire)

[Teachers] are the ultimate change agents.

(Jerome Bruner, The Culture of Education, p.84)



THANK YOU FOR YOUR ATTENTION!



More info: sch30@cam.ac.uk
(Papers available)

<http://tinyurl.com/DialogueIWB>

<http://tinyurl.com/REAL-OER4S>

www.oer4schools.org

Prezi: <http://tinyurl.com/SMECprezi>



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