Using interactive whiteboards to orchestrate classroom dialogue

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Introduction

The project is based on a sociocultural, dialogic model of education

We are interested in the potential of the interactive whiteboard (IWB) as a tool for supporting productive educational dialogue in a whole class setting – where Ts and learners are:

- reasoning; generating, justifying and evaluating ideas: ‘exploratory talk’
- responsively and cumulatively building on others’ ideas
- co-constructing new meanings and interpretations

(Alexander, 2004; Bahktin 1986; Mercer and Littleton, 2007; Mortimer and Scott, 2003)
Prior research has shown that...

- the teacher’s everyday repertoire includes a wide range of strategies from authoritative, direct instruction (providing information, checking understanding, maintaining fast pace) to dialogic, interactive communication (ensuring learners’ active participation, ‘reigniting’ and building on prior knowledge, open questioning, teaching & modelling use of language for thinking, varying pace according to need – including making time for whole class & group discussions)

  (Mercer & Littleton 2007; Scott & Mortimer 2003; Wolfe 2007)

- a dialogic approach is known to be fruitful for learning, developing reasoning skills and conceptual knowledge (Mercer & Sams 2006; Wegerif et al 1999) – but remains rare:

  “In many classrooms most of the dialogue appears to occur more by accident than in a deliberate, conscious manner”

  (Smardon & Bewley 2007)

We consider that...

- in the right hands the IWB can be a very useful tool for whole-class teaching...

- …but it has been widely introduced in UK schools (primaries have 9 each, secondaries have 24) without much consideration of how it might best be used for teaching and learning

  (Sept. 2007 Special Issue of ‘Learning, Media & Technology’ on IWBs)

- technology serves pedagogy… it “opens up a space for dialogue” (Wegerif 2007), but teachers’ beliefs about learning & their classroom ethos influence interpretations of the IWB’s value (Gillen et al 2006; Hennessy 2006; Warwick & Kershner 2008) & whether they enter that (constructed) dialogic space

- the tool itself has no transformative power, though it raises new possibilities…
Emerging findings from the *Interactive Whiteboards and Collaborative Pupil Learning in Primary Science project* (exploring children's semi-autonomous use)

*Neil Mercer, Ruth Kershner, Judith Kleine Staarman, Paul Warwick*

**What does the IWB offer as a dialogic tool?**
- Physical dialogic space
- Assistive memory
- Both provisionality and permanence
- Multimodality
- Interactivity

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**The case studies**

**Aims**
- To see how Ts with an established dialogic teaching approach might exploit the affordances of the IWB to stimulate effective classroom dialogue
- For researchers & practitioners to work collaboratively in developing & analysing pedagogical practices and reframing notions of dialogue in the context of IWB use

**Participants / Methods**
- 1 primary, 1 middle school, 1 secondary teacher: not expert IWB users (release funded; all gained university accreditation)
- 3 classes of students aged 11 (PSHE), 13 (English), 14 (History: all boys class)
- Trialling new approaches: 3 lessons videoed in each classroom, joint analysis of ‘critical episodes’
Supporting classroom dialogue with the IWB

Diane Lesson 2  (Primary Deputy Head teaching PSHE)

1. Audio file of teacher reading scenario engages students & frees up teacher to gauge responses

2. Teacher then asks Rebecca to “take suggestions about what people think is really important” and highlight text on IWB

3. Rebecca annotates around text to represent students’ understandings of the characters’ feelings as they are articulated during discussion, going beyond the given text...

My friend Sam asked to tell me something in secret, and then showed me bruises on her arm and back. She said her Dad hits her quite often, he hits her Mum and sister too. Last night her Dad walloped her across the head, and now she can’t see properly. Her sister says she must keep quiet and stay loyal to the family, because if she tells, her Dad will go to prison and the family will be split up. But her head hurts, and she’s scared to go home, and she needs to talk to someone. She says that she chose me because I am her best friend and I can be trusted to keep her secret.
Using multimodal resources supports dialogue & co-enquiry: example from history

Can we imagine the experience of trench warfare?

Lloyd stimulated discussion and speculation through:

- using multiple digital resources purposefully to make visible particular meanings and content, building up experience of trench life in 1st World War
- questioning and drawing out ideas
- small group talk and pairwork with mini-whiteboards (wipe-clean) – highly significant interludes in dialogic whole class teaching

Lesson 1

If I ever get sent to the front with a regiment I shall shed tears of joy, I do envy Chris going off as soon but I think this day will have his day soon too.

We expect to be moved to the front at any moment. The men apparently will be in the trenches alternate 24 hours, changing with a fresh lot of men during the night. I am behind HQ, probably a dug out where I sit and wait for the wounded to be brought to me. I am told that doctors are not allowed in the trenches. I am told that the feeding at the front is splendid and there is a Daily Mail for every 10 men.

Our men have had a terrible experience of 24 hours in trenches, drenched through and in some places knee deep in mud and water. To see them come out, line up and march off is almost terrible. They don’t look like strong young men. They are muddled to the eyes. Their coats are plastered with mud and weigh an awful lot with the water that has soaked in. Their backs are bent and they stagger and totter along with the weight of their packs. Their faces are white and haggard and their faces glare out from mud. They look like wounded, sick, wild things. Many, too many who are quite bent are told they must walk it. Then comes the nightmare of a march of 2 or 4 miles which they do in a trance.

Doctor’s diary: “Just by underlining something, it makes you think about it. So from that point of view, the use of the IWB and the annotation part, I think helps thinking” (Teacher)
Poem with spotlight; link to diary
Student dramatisation of 2 lines 😂
Mini-whiteboard interpretations

Lesson 2

Interpreting & visualising poem
Video storyboarding on mini-whiteboards, 2 pairs record on IWB
YouTube video “Paths of Glory”
Lesson 3

DVD audio track (no picture) of trench warfare: shelling and countdown

Class brainstorm words suggested by the sounds heard, recording ideas on IWB:

- busy
- hard to communicate
- loud
- bombing
- never a break
- in being shot at
- sitting ducks
- scared
- tactics
- blind fire
- whistle as a signal
- look
- don’t look unexpectedly
- actually worked
- so very slow
- it was

DVD video track (no sound)
[Is it possible for us to imagine the experience of trench warfare?]

“They are co-constructing knowledge focussed on this open-ended question” (teacher)

Ricky: It's like when you imagine winning the lottery... it wouldn't necessarily be like what you think.

Robert: You can imagine what it would look like, but you can't imagine what it would feel like or how you would be feeling.

Owen: Yes, because on the DVDs or on the films and the poems and stuff, it explains and you can see what it looks like, in wasteland, and you're both in trenches, but you wouldn't know what it was like to go ages without food or water.

Ricky: That's partially true, but you wouldn't know what it would be like to be shot by a bullet or be bombed or something.

Felix: ... every single person's experience with it would be different... Everybody's got different feelings towards the war... and you would only know what you felt like.

Teacher: Yes, can we ever achieve a common understanding of anything?

Interactivity supports explicit reasoning & building on others' ideas to construct new collective view

“building on their informed speculation from some of the things that they had seen” (Teacher)
Orchestration strategies illustrated

- Climate: creating a supportive environment for “working with ideas”, changing one’s mind, joint responsibility for learning
- Relinquishing control & developing a sense of co-enquiry: “Can we imagine what life in the trenches was like?”
- Accommodating to and building cumulatively on others’ views: reporting private interactions, publicly recording on IWB and giving status to P contributions (everyone’s ideas ‘count’)
- Managing dialogue, revoicing, guiding, moving thinking forward – using talk and evolving digital artefacts as complementary resources
- Allowing enough thinking and talking time; attending to the pace of learning, not lesson pace (focal point reduces pressure on students?)
- Strategic higher order questioning to draw out ideas & encourage critical reflection, reasoning, speculation, analogy, synthesis, evaluation – using multimodal resources as stimuli and recording devices
- Using digital resources & artefacts to render learning trajectories more visible, reignite understanding & maintain continuity of ongoing dialogue

Revisiting earlier activity of class and other classes too:

Exploiting distinctive IWB features – writing / annotation, saving resources for re-use / extension – to scaffold learning using a rich referential resource for subsequent discussion

Exploring others’ thinking & developing a learning community beyond confines of a single lesson or classroom
Conclusions

1. Using IWB technology opens up new spaces for (oral & multimodal) dialogue – at and away from board

This helps make differences between perspectives explicit & moves thinking on, through

- learners’ trialling of provisional ideas
- reflective, internal dialogue with collective artefacts on IWB
- whole class discussion
- small group peer discussion
- individuals/groups working out ideas using nondigital resources

IWB construed as central cultural resource for purposeful activity skilfully orchestrated by the T within a “dialogic classroom space.”

Conclusions

2. Ts use IWB technology to sustain dialogue & enquiry over time through revisiting, or referring to (currently or previously) projected digital resources & collectively constructed artefacts.

The “cognitive residue of prior actions is crystallized in the object”
(Cole & Engestrom, 1993, p.14)

Evolving digital artefacts represent a group’s activity and (reflexively) support further development of personal & shared understanding.

Again pedagogic intention is the driving force behind teacher exploitation of the technology’s affordances for dialogue.
Challenges

How can we strategically exploit rich potential of interactive technologies now available – and those coming soon – to make learning more engaging & successful?

What are the affordances & constraints of using / combining different modes for different pedagogical purposes?

How can we transcend the individualism that plagues our current educational systems and assessment frameworks?

Can educators now build on what we now know works: empowering students through collaborative, dialogic, participatory, problem- and inquiry-based activities?

“The dialogic classroom, that’s what it is about, isn’t it, to make thinking more analytical than just descriptive and narrative.”
(history teacher)

References

International Conference on Research into School Teaching and Learning with Whole Class Interactive Technologies
http://www.educ.cam.ac.uk/events/conferences/ritwit/

June 29-30, 2009
Cambridge, UK

Registration deadline is April 17

Project publications will be available from
Bryony Heather: bsjh2@cam.ac.uk
www.educ.cam.ac.uk/istl/pub.html