

#mathscpdchat 05 March 2019

Making the most of a visualiser in your mathematics classroom: how do you use yours? Hosted by Simon Ball

This is a brief summary of the discussion – to see all the tweets, follow the hashtag **#mathscpdchat** in Twitter



Some of the areas where discussion focussed were:

- pupils using a visualiser when explaining their ideas and methods to the rest of the class;
- putting pupils' work under the visualiser to prompt discussion ... e.g. putting under the visualiser pupils' mini-whiteboards that show their tentative approaches, ephemeral responses, their 'work-in-progress', ... 'freezing' what's on the screen so that pupils' products can be returned to them while the generated discussion continues;
- how to create an atmosphere in which every pupil is comfortable sharing their work with the whole class;

- using a visualiser to focus on misconceptions revealed in pupils' written products ... sensitivity to pupils' feelings, e.g. asking permission to show their work, and respecting their responses;
- using a visualiser to show 'struggles' (to solve problems ...) evident in pupils' writing/drawing in their books ... conveying the positive message that 'this is what doing mathematics looks (should look) like';
- prompting discussion by using the visualiser to show annotated hand-written
 '(formally-presented) solutions' by the teacher, pupils, or anyone else ... e.g. adding notes about 'thought processes' directly to written formal solutions;
- using a visualiser enables the teacher to write/draw on flat paper rather than on the board ... the teacher can therefore **observe pupils at the same time**, in a way that is not possible when one is writing on the board with one's back to the class;
- using a visualiser 'works like a charm' for any work with manipulatives ... showing everyone at the same time what the teacher or a pupil is doing with material learning-aids such as cuisenaire rods, multilink cubes, geoboards, pegboards ... ;
- **not fearing making mistakes as the teacher in front of the class** ... being happy to show that the teacher is not infallible;
- using a visualiser to explore methods of construction, drawing and measuring angles, elevations and plans ...;
- using a visualiser to class-mark homework ... such 'live' marking complements written comments that pupils read (or don't read?);
- **displaying (exam) mark scheme** ... pupils applying it to their written 'solutions'/'answers';
- comparing pupils' responses to (exam) questions ... showing (anonymously) good examples alongside not so good ones ... sharing excellent work and errors (anonymously);
- putting a calculator under the visualiser ... e.g. graphic calculator with backlit screen;
- using a visualiser to help pupils who struggle to well-present (set out) written solutions ... using a visualiser to model note-taking;
- the **kinds of visualiser that are available to buy** ... setting up a visualiser so that it is comfortable to use ... eg so that the teacher can write comfortably while standing to look at the classroom ... checking that the visualiser has a flexible neck, 'fast' autofocus, will show pencil marks clearly, and so on ... having a desk lamp to light up the page helps to maintain constant clarity.

In what follows, click on any screenshot-of-a-tweet to go to that actual tweet on Twitter.

An interesting 'conversation' of tweets, about using a visualiser to share pupils' work with the whole class, followed from this tweet by <u>Simon Ball</u>:



Simon Ball @ballyzero · Mar 5 Hello all - welcome to the #mathscpdchat !

Please make sure to write #mathscpdchat in any and all replies.

Q1) What do you use your visualiser for in class?

including these from Jonathan Hall and Simon Ball:



Jonathan Hall @StudyMaths · Mar 5

Replying to @ballyzero

Today a pupil made the common $100 - 25\pi = 75\pi$ mistake (circle in square scenario). I put her book under the visualiser and asked the rest of the class if they agreed with her answer. #mathscpdchat



Simon Ball @ballyzero · Mar 5

Correcting misconceptions live! Brilliant. I feel that my students would be reluctant to let go of their work if I wanted to do that - how do you create the atmosphere where everyone is comfortable sharing their work? #mathscpdchat

these from Jonathan Hall and Mark Williams:



Jonathan Hall @StudyMaths · Mar 5

I said something along the lines of "That's the most awesome mistake I've ever seen, mind if I share it with the class?" #mathscpdchat



Mark Williams @markuk73 · Mar 5

#mathscpdchat I discuss first before sharing, and ask for permission. Only focus on mistakes that most of many students have made.

these from Mary Pardoe and Simon Ball:



Mary Pardoe @PardoeMary · Mar 5 Replying to @StudyMaths @ballyzero

Yes ... you can show annotated hand-written 'solutions' by your students or yourself (or by anyone!) to prompt discussion ... e.g ... #mathscpdchat

2G + 30p = 900cStuck before I 6+30p = 600 c thought of doing this! G= = 300 c In D days 40 cows eat 40 Dc amount of grass. In D days amount of grass that comes available is Dp=10 pc A mount of grass available at start is 300c. 50 300 c + 10 Dc = 40 Dc 300 + 10D = 40D 300 = 30 D 10 = DSo 40 cows could grase for 10 days.



Simon Ball @ballyzero · Mar 5

Yes - adding my thought process directly to questions, directly on the page, is something I'm really looking forward to doing for revision. #mathscpdchat

these from Mrs Wakefield (Mews) and Simon Ball:



Mrs Wakefield (Mews) @MissMews1 · Mar 5 Replying to @StudyMaths @ballyzero

Understanding the mark scheme, put under the camera & them applying it to their work.

Today showing a beautiful graph that scored full marks .v. one that scored half marks. Why??

Walking Talking mock.



Simon Ball @ballyzero · Mar 5

This is something I need to do much more of - good examples alongside not so good ones. How do you assess the impact that's having? #mathscpdchat

these from Mrs Wakefield (Mews) and Simon Ball:



Mrs Wakefield (Mews) @MissMews1 · Mar 5 Better graphs next time? 😌 If their sheet/book is in a pile can easily be anon. Although overtime most students like their work shared, either way.



Simon Ball @ballyzero · Mar 5

Yes - and if it's anonymous, you can share excellent work or errors alike without anyone needing to know who was responsible/irresponsible! Superb.

and these from Chris and Simon Ball:



Chris @monteply · Mar 5

Replying to @ballyzero @Mr_N_Wood

Modelling but importantly, showing the struggle in kid's books. Crossed out errors, checking strategies and the conscious selection from a range of methods depending on the numbers used in the question. THIS is what maths should look like!



Simon Ball @ballyzero · Mar 5

Very true! Maths is not just the answer - it's the method too. I used to fear making mistakes in class but now I'm happy to show that I'm not infallible too.

(to read the discussion-sequence generated by any tweet look at the 'replies' to that tweet)

Among the links shared were:

<u>Becta Case Study: Visualisers</u> which is a report of a National Foundation for Educational Research (NFER) project to investigate the benefits for teachers in using visualisers in lessons. It was shared by <u>Mary Pardoe</u>

<u>An idea for the classroom - clusters of counters</u> which is an illustrated article from the NCETM Secondary Magazine describing a way of working (with a whole class on simple ratios) that would be greatly enhanced by using actual counters and a visualiser. It was shared by <u>Mary Pardoe</u>

<u>Focus on Pegboards</u> which is an illustrated article from the NCETM Secondary Magazine describing tasks for pupils using pegs on pegboards. The tasks might be introduced effectively to the whole class using actual pegs and pegboards and a visualiser. It was shared by <u>Mary Pardoe</u>

<u>Dudeney's Greek cross dissection puzzles</u> which is an illustrated article from the NCETM Secondary Magazine introducing dissection puzzles. The puzzles might be explored

effectively with the whole class using actual puzzle-pieces and a visualiser. It was shared by <u>Mary Pardoe</u>