National Centre for Excellence in the Teaching of Mathematics

#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:

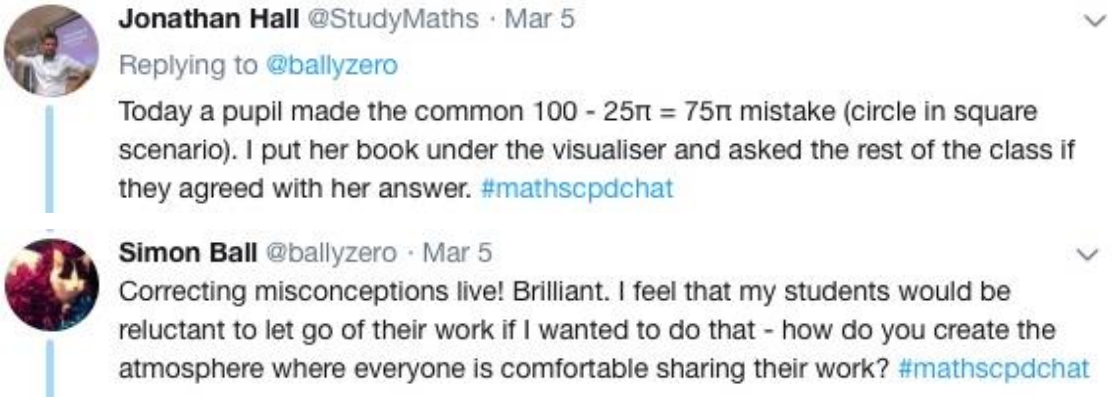
- **pupils** using a visualiser when **explaining their ideas and methods** to the rest of the class;
- putting **pupils' work under the visualiser to prompt discussion** … e.g. putting under the visualiser pupils' mini-whiteboards that show their tentative approaches, ephemeral responses, their 'work-in-progress', … '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.

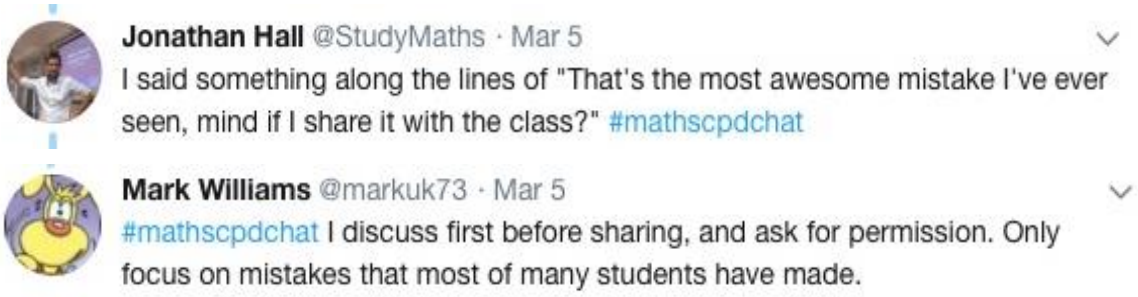
In what follows, click on any screenshot-of-a-tweet to go to that actual tweet on Twitter.

An interesting ‘conversation’ of tweets, about using a visualiser to share pupils’ work with the whole class, followed from this tweet by Simon Ball:

including these from Jonathan Hall and Simon Ball:



these from Jonathan Hall and Mark Williams:

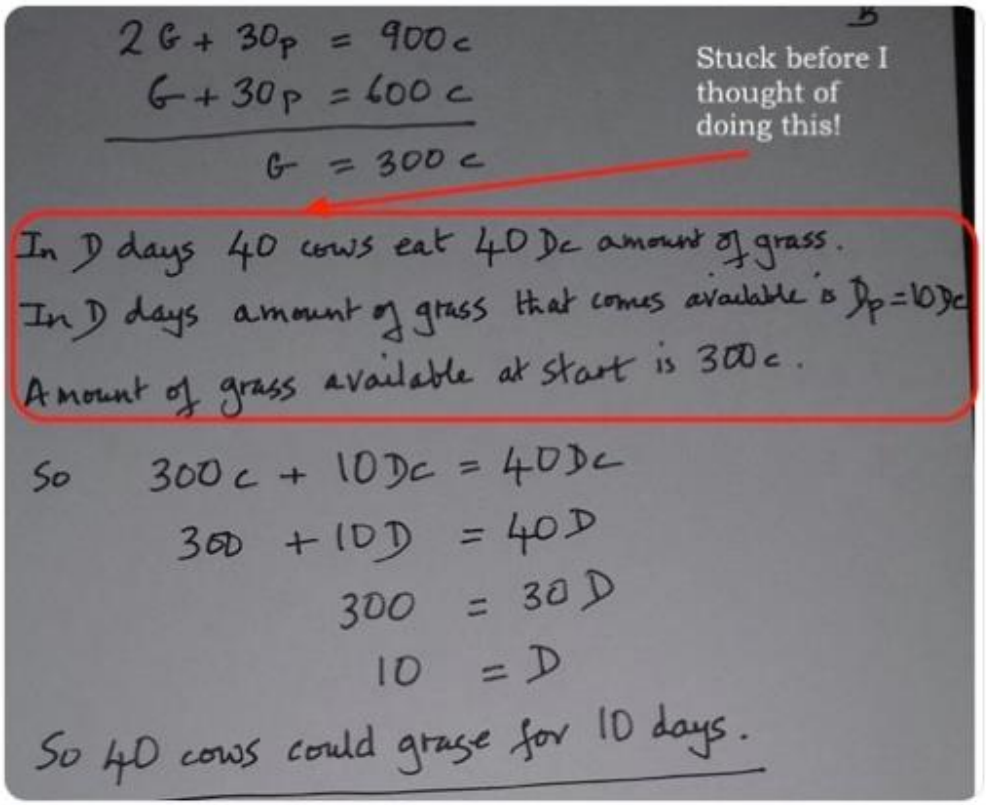


these from Mary Pardoe and Simon Ball:

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



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

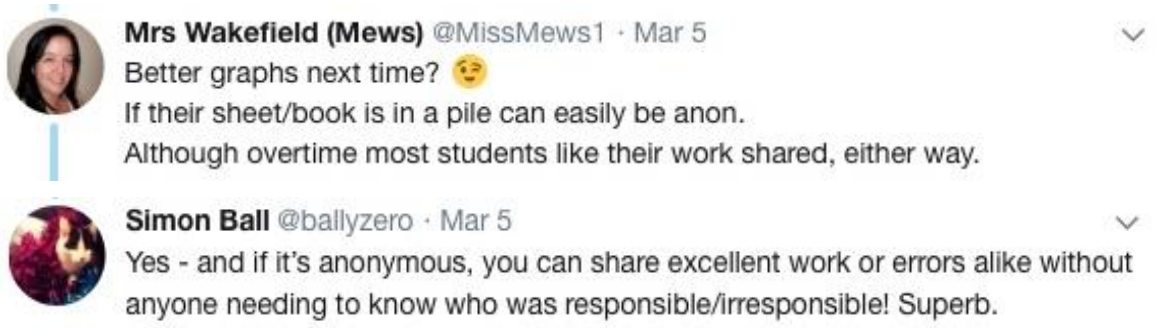
Replying to @StudyMaths @ballyzero

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.

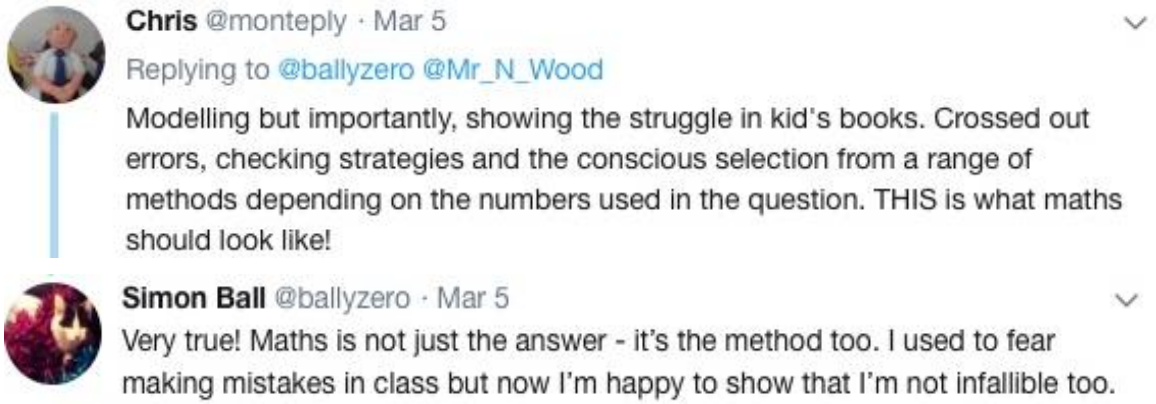
Simon Ball @ballyzero · Mar 5

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:



and these from Chris and Simon Ball:



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

Among the links shared were:

Becta Case Study: Visualisers 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 Mary Pardoe

An idea for the classroom - clusters of counters 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 Mary Pardoe

Focus on Pegboards 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 Mary Pardoe

Dudeney's Greek cross dissection puzzles 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 Mary Pardoe