

## #mathscpdchat 25 June 2019

### How can you make the best use of mini whiteboards in maths lessons?

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:

- the **frequency of maths lessons during which mini whiteboards (MWBs) are used** ... every lesson ... they are out on the tables at all times (whether pupils can become over-reliant on them) ... every other lesson (whether pupils are happy to 'put their whiteboards down', i.e. to move their attention away from them) ... going through phases during which they are used in most lessons, and others when their use is rare ... never, because the 'logistic hassle' is not worth it;
- **whiteboard work books** ... books with plain pages that pupils have out on their tables and use as if they were whiteboards ... one book may be used by two pupils who are working together;

- pupils trying to **express their ideas on MWBs** enables them to compare their thoughts and responses with those of other pupils, and may generate (naturally) productive discussion;
- pupils using MWBs for **'jottings' when reasoning and problem-solving**;
- pupils using MWBs to show the teacher/whole-class their **initial responses/ approaches** to a (hard or multi-step) problem ... pupils may need to be persuaded to reveal 'incomplete work' (i.e. to reveal their progress, or lack of progress, towards a solution) ... that what pupils show on a MWB may reveal where they have 'got stuck';
- that pupils are much **more likely to 'have a go'** if they know that they can easily erase what they write or draw on a MWB;
- pupils **'experimenting', and exploring examples, on a MWB before making any commitment to a 'final response'** ... trying-out ideas, discussing, trying again, modifying responses ... 'rehearsals' before putting anything permanently in 'exercise books';
- challenging pupils to **articulate verbally their reasoning before trying to express it on their MWBs** ... teacher can observe whether what pupils show on their MWBs truly represents the reasoning that the pupils articulated verbally;
- **using MWBs daily in Year 1 during 'developing fluency sessions'** ... e.g. 'What number is bigger/smaller than\_\_?', 'number-bond pairs, calculations that total\_\_', 'What is the missing number?', 'write a number that has\_\_', and so on;
- that MWBs on pupils' desks/tables are useful for **jottings that result from teacher-pupil interactions** as the teacher 'circulates' around the classroom;
- that **accepting responses shown on MWBs without comment**, before inviting pupils to justify their responses, helps to prevent pupils erasing their own responses when they see other pupils' responses;
- that the use of MWBs is a 'fit for purpose' issue ... useful, for example in response to 'show me a picture of ...' ... **when it's helpful to make a quick sketch** in response to any question or challenge;
- suggestion that **each pupil makes-up a question, and writes it on their MWB** ... when every pupil has done so, all the MWBs are displayed, so comprising a ready-made exercise for the class to work-on/discuss;
- **pairing-up pupils with one MWB between them** to try to solve a problem together, with the constraint that they cannot talk to each-other, and so must **communicate exclusively via marks on the MWB**;
- pupils using MWBs when working on **'less/same/more' 'grid-of-cells' tasks**;

- **using MWBs as an assessment ‘aid’** ... asking a question, observing every pupil’s response, deciding to whom to give **instant support** (and what form that support will take), and what **further challenge** to provide to whom;
- that what pupils show/express ephemerally on a MWB can easily be **made permanent by photocopying or photographing it**;
- having **pupils writing on tables or large-whiteboards-on-the-walls rather than on MWBs** ... because ‘you can see what they’re doing’ and ‘it doesn’t require pupils to hold things up’;
- providing a **‘safe place for rough jottings’ in pupils’ exercise books** (for example by ruling a three-inch margin down the right-hand-side of each page) as an alternative to providing MWBs for that purpose;
- **concerns that over-use of MWBs during earlier years may:** result in KS4/5-students becoming reluctant to write anything in their books unless they are ‘certain that it’s right’ ... hinder the development of pupils’ abilities to construct coherent solutions to multi-step problems ... send the message to pupils that some of their maths is ‘so unimportant that it doesn’t deserve to be recorded permanently in their books’;
- teachers acting in a way that encourages pupils to have **the same ‘lack-of-worry’ about making mistakes when working in their books as when working on MWBs**;
- that **maintenance of ‘all the MWB kit’ may be an issue** ... e.g. how frequently new pens need to be provided (bought) ... storing pens carefully ... establishing a ‘care-for-MWBs routine’, keeping MWBs in folders, and expecting pupils to look after them;
- **making your own ‘DIY’ specialised MWBs** using pieces of card placed in poly-pockets ... e.g. MWB coordinate grids, MWB number lines, MWB fraction walls, MWB place value charts, and so on.

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

This is part of a ‘conversation’ of tweets, about some advantages for the learning of pupils of the ephemeral nature of pupils’ sketches and jottings on MWBs, and how to turn such short-lived ‘work’ into permanent pupil-products if desired. The conversation was generated by this tweet from [Simon Ball](#):



including these from [Martyn Yeo](#), [Susan Whitehouse](#), [Mary Pardoe](#) and [Mrs BM](#):



**Martyn** @martynyeouk · Jun 25

Replying to @ballyzero

This is the best reason for them - our maths can be messy on our whiteboard work books

#mathscpdchat



**Susan Whitehouse** @Whitehughes · Jun 25

I'm with @martynyeouk, I love them for that reason. At A-level, I find students are much more willing to have a go on a mwb, and they are much more likely to sketch a graph or draw a diagram. I also find it so useful for me for showing bits of Maths to individuals as I circulate



**Mary Pardoe** @PardoeMary · Jun 25

I think mini-whiteboards were 'made for' initial 'trying-out-of ideas' about responses to these kinds of challenges ... no commitment ... and can try again ... and discuss, then modify ... #mathscpdchat

The ratio (in its lowest terms) of the number of black counters to the number of white counters is  $n : m$ .

		Value of $n$ →		
		lower	same	higher
The fraction of the counters that are black (in its simplest form) ↓	Denominator of fraction			
	lower			
	same			
higher				

Draw sets of counters that fit in the 8 cells, making as few changes to the set in the central cell as possible.

What have you learned about ratios and fractions of wholes?



**Mrs BM** @JB\_MathsTeacher · Jun 25

Replying to @ballyzero

Yes! Learning can be messy and whiteboards can be a nice place to just let loose and have a go! Though often I just tell pupils to use the back of their books instead #mathscpdchat

these from [Year 4 at Broseley](#) and [Simon Ball](#):



**Year 4 at Broseley** @MrJH\_Broseley · Jun 25

Replying to @ballyzero

Yes, almost as a rehearsal to confirm what they're doing before putting in their books. However, I try to get them to do as much as possible in books and not be afraid of making mistakes in their books.



**Simon Ball** @ballyzero · Jun 25

It's an interesting point - I'd like to see their working and thinking, but the chance to erase that forever... hence the back of the book! #mathscpdchat

these from [Lisa](#) and [Simon Ball](#):



The screenshot shows a vertical thread of four tweets. Each tweet includes a circular profile picture, the user's name and handle, the date, and the text of the tweet. The tweets are connected by vertical lines. The first tweet is from Lisa (@Elsie2110) replying to @ballyzero, discussing the benefits of mini whiteboards in primary schools. The second tweet is from Simon Ball (@ballyzero) asking how often Lisa photocopies mini whiteboards. The third tweet is from Lisa replying to Simon, explaining that she encourages pupils to move to paper but some prefer whiteboards. The fourth tweet is from Simon replying to Lisa, saying he likes that idea.

**Lisa** 🐸 @Elsie2110 · Jun 25  
Replying to @ballyzero  
This is my favourite thing about mini whiteboards - in primary I think pupils are much more likely to have a go if they know they can erase it. Plus they're easy enough to photocopy if they do something of note! #mathscpdchat

**Simon Ball** @ballyzero · Jun 25  
I'd never thought to photocopy a mini whiteboard! Brilliant! How regularly do you do that? #mathscpdchat

**Lisa** 🐸 @Elsie2110 · Jun 25  
Not often as I'd encourage pupils to move to paper, but some less confident pupils prefer to work on whiteboards. If something is a 'wow' or part of something larger they wanted to keep. #mathscpdchat

**Simon Ball** @ballyzero · Jun 25  
I like that. Makes it special. #mathscpdchat

and these from [me](#):



The screenshot shows two tweets from the user 'me' (@mathstiger70). The first tweet is a reply to @ballyzero, describing how the user gets students to take photos of their mini whiteboard work and mentions having large whiteboards and a Clever touch board. The second tweet is a follow-up saying 'Lots of photos taken using phones'.

**me** @mathstiger70 · Jun 26  
Replying to @ballyzero  
I get students to take a photo of their MWB work.... Also have 4 large whiteboards around the room that students can use plus the Clever touch board....

**me** @mathstiger70 · Jun 26  
Lots of photos taken using phones

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

Among the links shared was:

[NCETM Secondary Magazine 131: It Stands to Reason](#) which is an article that looks at examples of a particular kind of challenging task that pupils might productively tackle by initially making jottings and sketches on mini whiteboards. This task-type (designed by [John Mason](#)) uses a two-way-grid-of-cells that can stimulate pupils' deep thought about any pair of related quantifiable concepts that can both be applied to a mathematical object placed in the centre cell. It was shared by [Mary Pardoe](#) and [Richard Perring](#)