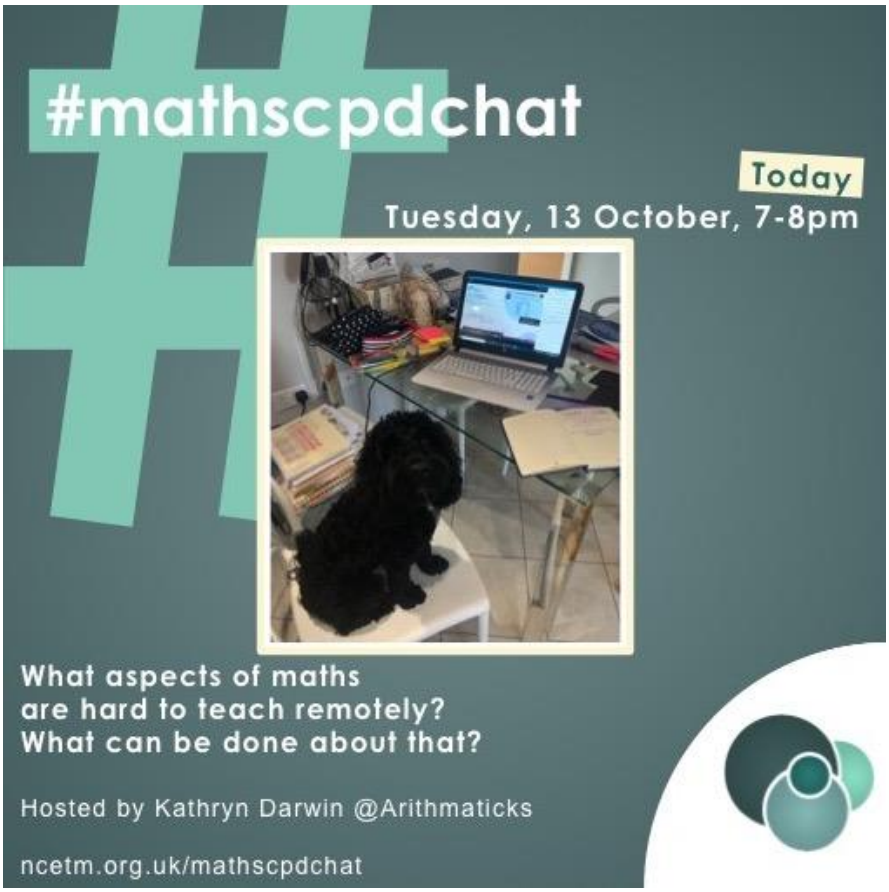
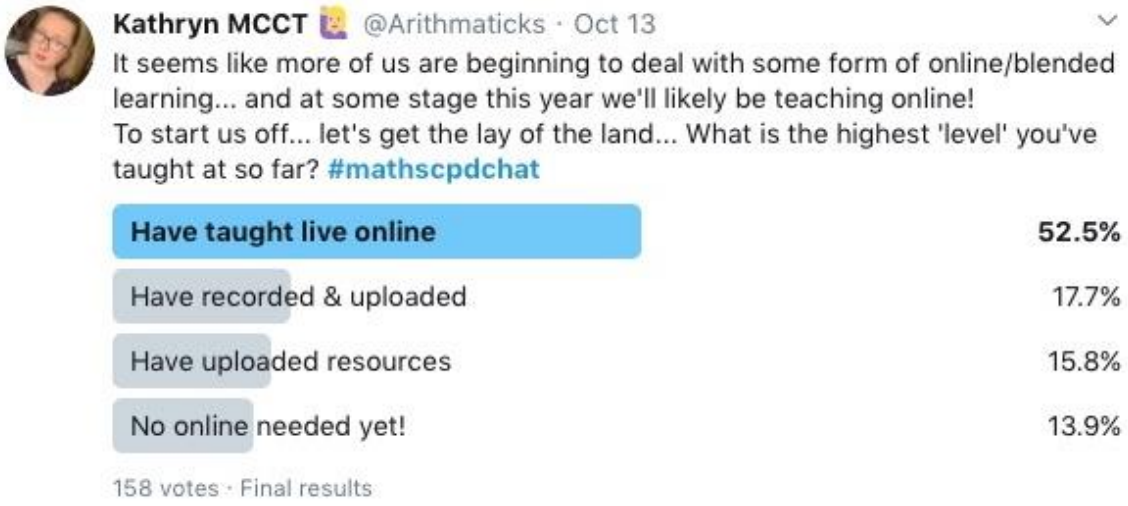
#mathscpdchat 13 October 2020

What aspects of maths are hard to teach remotely? What can be done about that?
Hosted by Kathryn Darwin

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



The **results of a poll,** tweeted by the host at the start of the chat, were:



Some of the areas where discussion focused were:

comments prompted by the tweeting of the poll included:

- **some teachers are working together 'on the best ways of doing hybrid learning'**, which they describe as 'the process of synchronous learning for a class that is split between those in the classroom with the teacher and those joining the lesson remotely via an online platform' … up to now the focus has been on practical issues, but these teachers are now starting to discuss pedagogical approaches, such as how to do questioning, how to obtain feedback from, and so assess the learning of, their pupils … several people suggested using a visualiser for 'modelling' rather than writing on the whiteboard so that 'pupils in the class and at home see the same thing', and using a chat function for teacher-pupil communication/discussion;
- teachers have **some Key Stage 4/5 students who are 'isolating' using Microsoft Teams to join in-school lessons from home**';
- the following **advice about teaching from home when you yourself are 'isolating'** was offered … when teaching in-school lessons from home it helps to have set up a visualiser in the classroom as high up as possible … at home use dual login (with Teams you can login on more than one device) and two screens (e.g. a desktop computer and a laptop, or a laptop and a phone), one for 'modelling' (doing one's own drawing/writing and displaying images) and one for viewing/talking to pupils in the class … it is also helpful to use a headset 'as initially I strained my voice speaking to the laptop as if I was projecting my voice in a classroom' … in order to be able to work like this from home it is essential to have a fast broadband connection;

- when teaching in school some teachers are 'doing everything with a **graphics tablet**' … using a graphics tablet to annotate PowerPoint slides while sharing the screen with pupils at home;

how teachers are keeping maths learning going when some pupils, or the teachers themselves, are forced to work from home:

- when a whole year group has had to work from home for a few weeks this term, many teachers have found that teaching online has gone very well, but it has been **harder when only a few pupils in a class have had to isolate** (for example owing to family cases that are not connected to the school);
- some teachers **do not intend to change their Schemes of Learning (SoL/SoW) if 'bubbles' are sent home** … they will record lessons and upload them via Teams, and expect pupils 'to submit one assignment a week';
- that presently it is **hard to plan too far ahead** … some teachers have moved some topics (such as constructions and graphs) from the 'lockdown time' into this term's work 'so we ensure we cover them in class with resources';
- that it is **advisable to show pupils how to use Teams now while they are in school**, just in case they have to work from home at short notice;
- when teaching 'live lessons' to pupils working at home **some teachers 'call a register' at the start of every virtual lesson**, and wait for each pupil to speak a reply or type it in a chat box … 'it makes them realise that turning up is expected' … as they join in 'I say 'Good Morning X' to each pupil by name, to make sure that I've spoken to all of them before the lesson starts' … it is effective to follow up absentees with a message to them (via Teams or email), copying in parents, saying, for example 'I notice you didn't make the lesson, I just wanted to check everything was OK. Here is the work you missed';
- a teacher described **how he uses *Complete Maths* (examples, tutorials and resources) to plan hybrid lessons** … he 'logs on in the classroom and sees today's topic, notes and resources', which he displays for pupils to see on screen … he does not have to prepare any printed worksheets … students who are working at home log in from home and see the same as those in the classroom, and those at home can access tutorials to help them … this teacher sets a quiz for homework every two weeks … it was suggested to him that it's helpful also to set a five-minute quiz on each day's learning, pupils' responses to which 'can be really instructive as to how you should plan your next lesson';

how teachers are trying to overcome difficulties in the remote teaching of (aspects of) maths that is/are 'hard to teach online':

- that the biggest hurdle to overcome is **the challenge of finding effective ways to carry out AFL (assessment for learning)** … at least one teacher uses a visualiser and Zoom to 'live model' 'notes/work/solutions' ('all Zooms are recorded and can be uploaded to

our LMS so the content is always available') and a chat function so pupils can type in questions/responses;

- some teachers **take photos of pupils' work**, and then use technology to display them on their main board to annotate over;

practical issues when teaching in-the-classroom and online simultaneously:

- it means **keeping track of two sets of technology**, 'the interactive whiteboard and what's showing on Teams' … or using a visualiser exclusively and keeping track of two sets of students … that it can be hard when teaching in school to remember to keep a close eye on the pupils who are at home;
- that there are **'autopilot' things you normally do in the classroom that you can't do in 'hybrid' teaching** … for example you can't move too far away from the microphone, and you can't move from writing on one board to writing on another … a teacher commented that when she has to use a second board she puts a photo of it in the online chat … that it is usually necessary to summarise responses/questions from pupils in the classroom so that pupils at home know about them … sometimes the teacher has to mute temporarily the classroom so that the pupils at home cannot hear anything from the classroom, for example while correcting bad behaviour of pupils in the classroom;
- **remembering to ask pupils at home to 'unmute' their microphones when responding to questions**, so that those in the classroom can hear what they are saying … 'students found it hysterical the first time their friends' voices came through the smart TV';
- that **the pace of the lesson can be slower** … 'today's lesson was 15 in school, 11 'live' at home – definitely a slower pace, but enjoying it';
- the trickiest part can be **having to remain 'at my desk' in order to control/operate the technical things** … not being able easily to point to areas of the board;

simultaneous in-school and online teaching that has been particularly successful:

- teaching **trigonometry and using Pythagoras' Theorem** … for example when sending pupils in school AND those at home outside to work out heights of trees and buildings;
- that pupils learning to work with and on **algebraic fractions** 'went really well' … using the *Learning by Questions* website (link provided below) 'made it really easy to monitor progress live, and intervene where needed';

how teachers are compensating for the aspects of their normal practice that are not usable/do-able in online teaching:

- some teachers are currently **relying on pupils to ask questions and make comments to compensate for the lack of the 'constant feedback you get from seeing their facial expressions'** … some pupils who are working at home are using 'thumbs up' to indicate 'got it', 'normal sitting' for 'kind of okay' and 'mute the video' for 'not being sure'

… the teacher is then able to see that those pupils who turn off their microphones are requesting attention;

- that **normally the time taken by individuals to write/draw something provides useful feedback during a lesson** … when you are not able to observe this it is harder to teach 'responsively';
- that the teacher **cannot see what pupils who are in a different room have written/drawn on their mini-whiteboards**, and pupils at home cannot see what is on the mini-whiteboards of pupils in school;

how teachers are dealing with 'hands on' topics that are hard to teach virtually:

- some teachers are **skipping hard-to-teach online topics**, such as constructions and 'resource heavy topics like histograms', until all pupils are back in school;
- some students at home and in school are **using Desmos** (rather than pencils, paper, rulers, pairs of compasses, cardboard mirrors, etc) to explore and work with transformations … the problem of providing similar opportunities for those pupils who don't have the equipment/technology required to work with Desmos … that sending home 'work packs' to support such learning 'is not really the same', but some teachers are having to do that and support students using a visualiser … that there are some topics 'where you just need pencil and paper';
- **preparing printed worksheets and/or booklets** so that if pupils suddenly need to work on these topics at home you have the material ready;

elements of teachers' normal in-school teaching that they try to carry through to online teaching:

- at least one teacher is **continuing his normal practice of taking photos of his 'boardwork'** which he uploads to his computer after each lesson, and which (twice a term) he prints out and compiles into a pdf booklet, a copy of which each student receives 'so they can reflect and revise' … this teacher uses an application called *Tiny Scanner* to get images of the board which he puts into folders that he adds to Google Classroom or uploads to his school's LMS;
- another teacher **tries to carry through to online teaching his 'energy and pace'** … 'it's so easy when you are on your own in a room to drop this' … if lockdown happens again he is considering using a wireless headset so he can move around while teaching at home … 'sitting down for 60 minutes drops my pace';
- a practice that some teachers will carry-over from online teaching to in-school teaching (the other way round) is **getting pupils to take photos of their homework, and upload them to Google Classroom** … 'so I can see mistakes/misconceptions to address in the next lesson';

what teachers think they need to 'ditch' from their normal in-school practice in order to make their remote teaching more effective:

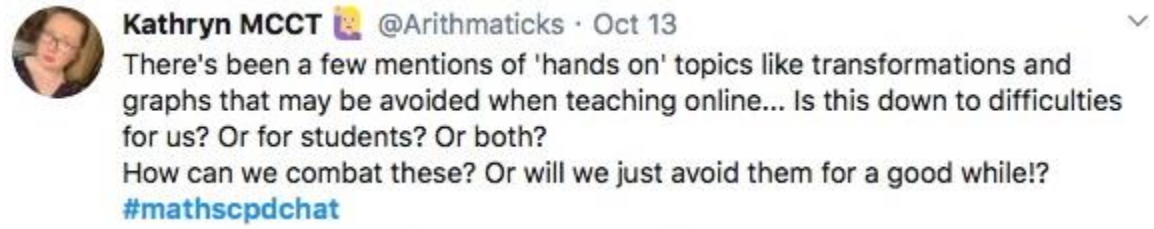
- delivering instructions that include the phrase ‘do not’ … if a pupil’s online connection ‘wavers’ as the phrase is uttered they might do it instead of not doing it;
- forcing oneself (while pupils are working on a task during live online/remote teaching/learning) not to talk to small pockets of pupils as a teacher might do during a normal in-school lesson;

what teachers feel they need to learn in order to make the most of remote teaching:

- that in remote teaching it is **very important to assess and engage those pupils who are struggling** … that it is harder in remote teaching to see who those pupils are … during in-school lessons the teacher’s observations (such as the observation of a pupil’s body language or of what s/he is (not) writing/drawing) usually indicate who needs urgent attention;
- **how to control (turn on/off) pupils’ microphones** … ‘I’ve had parents telling off their children in the background, very awkward to know that they weren’t aware that I and the other 30 students were listening’ … a possible plan is to have all pupils muted at first, and ask them to raise their hands when they want you to unmute them.

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

This is a part of a conversation about how a very effective way for pupils to work on a hard-to-teach-remotely part of mathematics requires pupils to use a resource (Desmos), and what might be done for pupils who don’t have a device on which they can use it. The conversation was generated by this tweet from Kathryn Darwin:



and included these from MrHawesMaths and Kathryn Darwin:

MrHawesMaths @HawesMaths · Oct 13

Sure because desmos was an opportunity for them to discover and play around with the transformations/note the effects.visualiser work was more formal application of transformations and then they did some exercises on transformations after.We spent a good 2 weeks #mathscpdchat

these from Mary Pardoe, MrHawesMaths and Kathryn Darwin:

Mary Pardoe @PardoeMary · Oct 13

Replying to @HawesMaths and @Arithmaticks

Seems a brilliant way of working to me!

For those students who've got the technology set up!

MrHawesMaths @HawesMaths · Oct 13

That is true. I was very fortunate that all students had access to computers etc. I know some couldn't do that and that would have frustrated me no end. #mathscpdchat

Kathryn MCCT 🙋‍♀️ @Arithmaticks · Oct 13

Definitley the case for us... it is very hard! #mathscpdchat

MrHawesMaths @HawesMaths · Oct 13

So how do you cater for those students? Do packs get sent home? #mathscpdchat

Kathryn MCCT 🙋‍♀️ @Arithmaticks · Oct 13

We have a few laptops we were able to give out initially when lockdown first happened, which minimised it, but even then we had some multi-child households with one device. Now we have some more available if isolating (govt schemes) but still not enough in general #mathscpdchat

and these from Kathryn Darwin, Director of Maths, Mr Evans Maths and HarDen1997(Miss D):

Kathryn MCCT 🙋‍♀️ @Arithmaticks · Oct 13

We sent work packs, but its not the same really. We're hoping the schemes mean more laptops available to help if we have a lockdown of any scale... #mathscpdchat

Director of Maths @DirectorMaths · Oct 13

Replying to @Arithmaticks

I'd want to send the printed resources home and then model under a visualiser. As much as the online platforms are great there's some topics where you just need pencil and paper! #mathscpdchat

Mr Evans Maths @EvansMaths79 · Oct 13

Replying to @Arithmaticks

Visualiser and share your window? Hard to check pupils work but can easily model

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

Among the links shared were:

How to mute people in Microsoft Teams which is where you can find information about muting and unmuting people in Teams. It was shared by MrHawesMaths

Changing participant settings for a Teams meeting which describes the changes that organisers can make on the 'Meeting options' web page provided for users of Teams. It was shared by Ms Steel

Learning by Questions which is 'a classroom app filled with curriculum-aligned Question Sets and immediate feedback to super-charge learning'. It was shared by Jenna Sanderson