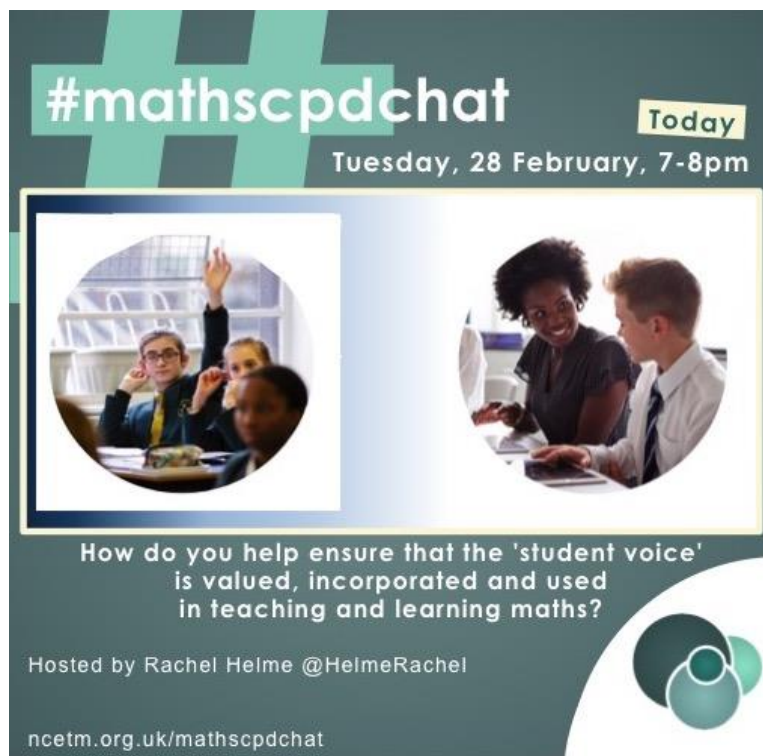


## #mathscpdchat 28 February 2023

How do you help ensure that the 'student voice' is valued, incorporated and used in teaching and learning maths?

Hosted by [Rachel Helme](#)

This is a summary of the discussion – to see all the tweets, follow the hashtag [#mathscpdchat](#) in Twitter



The graphic features a large green hashtag symbol on the left. To its right, the text '#mathscpdchat' is written in white on a dark green background. Further right, a yellow box contains the word 'Today', and below it, the text 'Tuesday, 28 February, 7-8pm' is displayed. Two circular inset images show a classroom scene with a student raising their hand and a teacher interacting with a student. At the bottom, the discussion topic is repeated in white text on a dark green background. Below this, the host's name and Twitter handle are listed, followed by the website URL. A small version of the NCETM logo is in the bottom right corner.

#mathscpdchat Today  
Tuesday, 28 February, 7-8pm

How do you help ensure that the 'student voice' is valued, incorporated and used in teaching and learning maths?

Hosted by Rachel Helme @HelmeRachel

[ncetm.org.uk/mathscpdchat](https://ncetm.org.uk/mathscpdchat)

The links shared during this discussion were:

[Building an inclusive community of mathematical inquiry](#) which is an article by Hollie Walton and Andrew Blair in the [ATM's Journal](#), *Mathematics Teaching* 281. The authors share case studies to argue that inquiry classrooms are equitable classrooms. It was shared by [Mary Pardoe](#)


[Learning mathematics - who is in charge?](#) which is an article by Derek and Barbara Ball in the [ATM's Journal](#), *Mathematics Teaching* 282. It is the transcript of the talk with which they opened the ATM 2022 Conference. It includes some students' responses when asked whether or not they thought that they were becoming autonomous learners. It was shared by [Mary Pardoe](#)

[Care](#) which is an article by Anne Watson in the [ATM's Journal](#), *Mathematics Teaching* 279, in which she explains why 'care' is important in mathematics education. It was shared by [Mary Pardoe](#)


[Care in Mathematics Education: Alternative Eduational Spaces and Practices](#) which is book by Anne Watson in which she investigates the process of care in mathematics teaching. It was shared by [Mary Pardoe](#)

**An illustrated summary of the discussions in this #mathsCPDchat follows.**

This was the host's welcome tweet:

 **Dr Rachel Helme** 🎓🌻👉 @HelmeRachel · 20h ...  
Welcome to this evening mathscpdchat on the voices of students in the teaching and learning of mathematics. Please remember to use the hashtag [#mathscpdchat](#) in all of your replies!!


Rachel's first main question ...

 **Dr Rachel Helme** 🎓🌻👉 @HelmeRachel · 20h ...  
[#mathscpdchat](#)  
Let's begin with question 1: How have you used student voice in relation to the teaching and learning of mathematics? what was success?


... generated two conversations. This discussion eventually focused on developing a departmental strategy ...

 **Joanne Green** ✓ @MsJoanneGreen · 20h ...  
Q1) @HelmeRachel [#mathscpdchat](#) On Monday in year 7 art, I showed the pupils how to measure their row of four 4cm by 4cm cubes for cross hatching that was spare light to the left cube and lines closest to the right cube. Pupils measured perimeter but struggled with lines.

 **Dr Rachel Helme** 🎓🌻👉 @HelmeRachel · 19h ...  
Replying to @MsJoanneGreen  
[#mathscpdchat](#) Sounds fab! in what way did you use the voices of students?

 **Joanne Green** ✓ @MsJoanneGreen · 20h ...  
@HelmeRachel [#mathscpdchat](#) for pupils who do all of the work that's been set, then I let them devise their own extension work. I let them know that can be going back through their book to finish things off, drawing maths, or using any of the textbooks in the room.

 **Dr Rachel Helme** 🎓🌻👉 @HelmeRachel · 20h ...  
Replying to @MsJoanneGreen  
[#mathscpdchat](#) Amazing! Is this departmental policy or are you flying the flag on your own?

 **MrHawesMaths** @HawesMaths · 20h ...  
Replying to @HelmeRachel and @MsJoanneGreen  
On Fridays, I have a review day where students decide what areas to work on and then carry out some independent work. They can choose to collaborate if needed and will choose their own questions/design flash cards to help with their understanding. [#mathscpdchat](#)



**Dr Rachel Helme** 🎓🌻👉 @HelmeRachel · 20h ...

Replying to @HawesMaths and @MsJoanneGreen

#mathscpdchat that interesting. What strategies have you used to make this work? Are they confident in knowing what they need to work on?



**MrHawesMaths** @HawesMaths · 20h ...

Replying to @HelmeRachel and @MsJoanneGreen

We start off by doing a quick weekly skills check from @mathsbox1 then we have a moment to reflect on previous work (last week/last term) then they set up an independent session using @DrFrostMaths to practice questions or read around previous notes on OneNote. #mathscpdchat



**Dr Rachel Helme** 🎓🌻👉 @HelmeRachel · 20h ...

Replying to @HawesMaths @MsJoanneGreen and 2 others

#mathscpdchat are you seeing measures of success?



**MrHawesMaths** @HawesMaths · 20h ...

Replying to @HelmeRachel @MsJoanneGreen and 2 others

I would say so. Students are becoming more independent and it is creating a culture where they have to reflect and review regularly and take steps to improve. I would say that their maths has developed but their soft skills have developed more. #mathscpdchat



**Dr Rachel Helme** 🎓🌻👉 @HelmeRachel · 20h ...

Replying to @HawesMaths @MsJoanneGreen and 2 others

#mathscpdchat absolutely agree. Is this a departmental strategy?



**MrHawesMaths** @HawesMaths · 20h ...

Replying to @HelmeRachel @MsJoanneGreen and 2 others

Working on it. Interestingly, feedback from students about feedback has reared its head recently. Written is not really followed but they much prefer the 'shop floor' feedback as they are working and a self reflective session later on. prompting a no mark policy?!#mathscpdchat

... and later there were quote-retweet replies to two of the questions that Rachel had asked during the conversation:



**Joanne Green** ✓ @MsJoanneGreen · 21h

...

@HelmeRachel #mathscpdchat I find writing a list of rewards on the board helps best for motivation. I also repeat it verbally. The ones who enjoy maths are very good at choosing an appropriate topic. I continue to check on them, so they know they are not forgotten in class.



**Dr Rachel Helme** 🎓🌻🗣️ @HelmeRachel · 21h

Replying to @HawesMaths and @MsJoanneGreen

#mathscpdchat that interesting. What strategies have you used to make this work? Are they confident in knowing what they need to work on?



**Joanne Green** ✓ @MsJoanneGreen · 21h

...

@HelmeRachel #mathscpdchat I work supply, so I always check with the teacher who has set the work. I'd personally have pupils who have completed the work to do something maths based rather than chat and stop others from working. Ultimately, it's up to the teacher.



**Dr Rachel Helme** 🎓🌻🗣️ @HelmeRachel · 21h

Replying to @MsJoanneGreen

#mathscpdchat Amazing! Is this departmental policy or are you flying the flag on your own?



**Dr Rachel Helme** 🎓🌻🗣️ @HelmeRachel · 21h

...

Replying to @MsJoanneGreen

#mathscpdchat it sounds like you are doing amazing work though, encouraging independence and agency.

The other conversation that the host's first question prompted was about an article in the ATM's *Mathematics Teaching* 281:



**Mary Pardoe** @PardoeMary · 19h

...

Replying to @HelmeRachel @MsJoanneGreen and @HelmRachel  
@inquirymaths might have some interesting experiences to share. This is an extract from an article in MT281 ... here: [atm.org.uk/write/MediaUpl](http://atm.org.uk/write/MediaUpl).  
#athscpdchat

## Building an inclusive community of mathematical inquiry

Hollie Walton and Andrew Blair share case studies to argue that inquiry classrooms are equitable classrooms.

**W**e would argue that mathematics classrooms are exclusionary and are becoming more so. The social movements that aim to dismantle discrimination and inequality seem to be having little impact on the learning and teaching of our subject. Approaches that marginalise students' ideas and contributions seem to continue to gain ground. We think that inclusive practices are now more urgent than ever. By building communities of inquiry in our classrooms, we aim to offer all students the opportunity to participate in mathematical exploration and reasoning and to have a voice in the direction of their learning.



**Laurie Jacques (she/her)** @SmartJacques · 18h

...

Replying to @PardoeMary @inquirymaths and 3 others  
What a lovely article. That copy of MT is still on my desk waiting to be read! 😊👍



**Joanne Green** @MsJoanneGreen · 19h

...

@PardoeMary @HelmeRachel #mathscpdchat In theory this is a great idea, but you need to remember that the pupils don't have a good understanding and acceptance of having to do work they don't want to do such as writing calculations out instead of doing them on laptop.



**Dr Rachel Helme** 🎓🌻👉 @HelmeRachel · 19h

...

Replying to @MsJoanneGreen and @PardoeMary  
#mathscpdchat are there any strategies that can help do you think?



**Mary Pardoe** @PardoeMary · 19h

Replying to @MsJoanneGreen and @HelmeRachel

Have you read the whole article Joanne? I gave the link to it. I'm sure that students could do calculations on a laptop if they wanted to in many of the inquiries in, and with the ways of teaching in, the kinds of exploration that are the focus of the article. #mathscpdchat



**Joanne Green** @MsJoanneGreen · 21h

Which article? @PardoeMary #mathscpdchat @HelmeRachel I need to leave now. Thanks 🙄



**Mike Ollerton** @MichaelOllerton · 7h

Replying to @PardoeMary @HelenHindle1 and 4 others

Inclusion is fundamentally about creating classroom cultures where all students have opportunities to inquire/explore and to access mathematics; not to be labelled according to a notion of 'ability' groups.

Rachel's second main question ...



**Dr Rachel Helme** 🎓🌻👉 @HelmeRachel · 20h

Question 2: In what ways do you make sure students know their voices are valued in the classroom?

#mathscpdchat

also generated one conversation, two related single comments, and a further single comment. The conversation focused on the strategy of giving students freedom to choose, from a given set of tasks, those on which they will work during a particular lesson:



**Miss** 🗣️🗣️ @ed\_lead · 20h

Replying to @HelmeRachel

A.2:

- Freedom to choose.
- Setting rules such as everyone has the right to Participate, and everyone has the right to Pass.
- Appreciation #mathscpdchat



**Dr Rachel Helme** 🎓🌻👉 @HelmeRachel · 20h

Replying to @ed\_lead

Remember the #mathscpdchat

Freedom to choose, interesting! How does that work in practice?



**Miss** 🙌🗣️ @ed\_lead · 20h

Replying to @HelmeRachel

Workable in assignments/projects. Tic-Tac-Toe could be used to suggest topics. Ss could choose diagonally/horizontally/vertically in the figure. 1 out of 3 topics and a sub-topic could be a challenge, to maximum learning opportunity for all category of learners #mathscpdchat



**Miss** 🙌🗣️ @ed\_lead · 20h

Replying to @ed\_lead and @HelmeRachel

All in all, some sort of differentiative tool #mathscpdchat



**Dr Rachel Helme** 🧑🏫🌻🗣️ @HelmeRachel · 20h

Replying to @ed\_lead

# so they get the freedom to choose, under the constraints set by the teacher.



**Miss** 🙌🗣️ @ed\_lead · 20h

Replying to @HelmeRachel

Depending on the type of grouping and age, the Tr would need to decide.



**Dr Rachel Helme** 🧑🏫🌻🗣️ @HelmeRachel · 19h

Replying to @ed\_lead

#mathscpdchat How does this work in terms of planning? Will the teacher need to have 9 resources?



**Miss** 🙌🗣️ @ed\_lead · 19h

Replying to @HelmeRachel

Not necessarily 9 different resources, Tr. could plan for repetition such as, one in the middle block that all groups would attempt, so each group is assessed for that one similar topic, and a deliberate list of two either simpler or challenging that leads to some achievement.



**Dr Rachel Helme** 🧑🏫🌻🗣️ @HelmeRachel · 19h

Replying to @ed\_lead

#mathscpdchat a sense of success seems important does it?



**Joanne Green** ✓ @MsJoanneGreen · 21h

@HelmeRachel #mathscpdchat Yes, a sense of success is very important as confidence is low, resulting in some pupils not doing anything - even if their parents are informed. Sometimes the success is not as successful as it ought to be, but at least they are getting back into it.



The other replies prompted by Rachel's second main question ...



**Dr Rachel Helme** 🧑‍🏫 🌻 🗣️ @HelmeRachel · 20h

...

Question 2: In what ways do you make sure students know their voices are valued in the classroom?

[#mathscpdchat](#)

... were these two related ones about an MT article and the associated book ...



**Mary Pardoe** @PardoeMary · 20h

...

Replying to [@HelmeRachel](#)

Anne Watson, in an article in MT279 (which is here: [atm.org.uk/write/MediaUpl.](http://atm.org.uk/write/MediaUpl.)) about her book about care in maths teaching, wrote re some observations/suggestions ...

[#mathscpdchat](#)

It may be that at times parental care, or therapeutic care, or care for some institutional norms, took precedence but when mathematics was the focus these seemed to be the common ingredients of care.

- the absence of 'talking at' and the primacy of 'listening to'; response to students' ideas, language and sense-making; adapting teaching to support learning;
- working with what students bring into the educational space; incorporating students' emotional and social selves in mathematics learning; treating students as individuals within wider society and communities;
- design and choice of tasks that support meaning-making; using multiple materials and representations; using 'outside' as a source for mathematising;
- expectations of and support for capabilities of abstract reasoning; teachers and students working side by side on mathematical tasks;
- curriculum norms being respected, but students' interests and strengths often take priority.



**Mary Pardoe** @PardoeMary · 20h

Replying to @PardoeMary and @HelmeRachel

This is a link to Anne's book: [amazon.co.uk/Care-Mathemati..](https://www.amazon.co.uk/Care-Mathematics-Education-Alternative-Educational-Spaces-and-Practices-Author-Anne-Watson/dp/1108841111)  
#mathscpdchat



... and this quote-retweet comment:



**Joanne Green** ✓ @MsJoanneGreen · 20h

@HelmeRachel #mathscpdchat I let pupils know that I like their questions / responses, and that I think they've made a good comment. If it's not or is related to what we are doing then I feed it back to the teacher or head of year.

**Dr Rachel Helme** 🎓🌻🗣️ @HelmeRachel · 20h

Question 2: In what ways do you make sure students know their voices are valued in the classroom?  
#mathscpdchat

The host's third main question ...



**Dr Rachel Helme** 🎓🌻🗣️ @HelmeRachel · 20h

#mathscpdchat Question 3: What about student voice ABOUT lessons? How does this work in your setting?

... generated this two-tweet agreement ...



**Joanne Green** ✓ @MsJoanneGreen · 20h ...

@HelmeRachel #mathscpdchat Depends upon school. A lot of pupils in deprived locations feel the school council is only for the prefects regardless of the school policy. So, they don't get involved and their voice is unheard. No teachers have given a choice of work to complete.



**Dr Rachel Helme** 🍷🌻👉 @HelmeRachel · 20h ...

Replying to @MsJoanneGreen

#mathscpdchat this is my thoughts too. There is research that suggests that the "good" pupils are on school councils and cant advocate for ALL students. Some students voices are not heard or at least marginalised.

... and this single reply:



**Mary Pardoe** @PardoeMary · 20h ...

Replying to @HelmeRachel

Barbara and Derek Ball wrote about their experience re this in MT282 here: [atm.org.uk/write/MediaUpl.](http://atm.org.uk/write/MediaUpl.)

#mathscpdchat

## Learning mathematics – who is in charge?

Derek and Barbara Ball opened the ATM 2022 Conference with this talk.

So I have been talking about how teachers and public examinations decide what students have learnt. What did my students think they were learning? And did they think they were becoming autonomous learners? There was only one way to find out.

Ask them!

I did this by giving each student a notebook. Once a week I asked them to write whatever they wanted about their maths lessons that week. I also responded by writing in their notebooks as often as I could. Here are some of the things they said.

I don't think I get enough help when I need it, but I often get help when I don't need it.

This recalls the story Derek told about Pat's intervention being ignored. Knowing when to intervene was a daily challenge for me.

When we are getting on with our work and when we speak to each other about it, you think we are speaking about something else and tell us off.

I used to encourage students to work together in small groups so it was not always easy to know if they were on task or not.

You give me as much help as I need. Occasionally you go away without finishing what you were saying to me.

This hurt because I knew it was true. If there was a disturbance in the class it was easy to be distracted. After this, I tried hard not to walk off in the middle of saying something.

But I did get some feedback about the mathematics rather than about me!

I enjoy maths most when we are doing problems that are just a little harder than we should be capable of doing.

This student was enjoying being challenged. We often worked on one broad topic for some time and students were able to develop challenges for themselves within that topic. And finally, I still treasure this comment.

What I have learned is to work independently and solve problems for myself rather than relying on the teacher all the time.

To Rachel's fourth question ...



**Dr Rachel Helme** 🎓 🌻 🍌 @HelmeRachel · 21h

#mathscpdchat Here's a biggie for question 4: How can we provide opportunities for unheard voices to be listened to? Maybe those students who are not on the school council or who don't speak up in class?

... there were these three separate suggestions ...



**Simon Ball** @ballyzero · 21h

Replying to @HelmeRachel

I usually ask students to vote on the things they want to revise. Everyone gets a vote, secret ballot, and so their voices are counted then.

#mathscpdchat



**Miss** 🍌 🗣️ @ed\_lead · 21h

Replying to @HelmeRachel

#mathscpdchat

A4: A box inside or outside classroom for quiet one's to post notes, which the Tr. or council members can have access to. Appropriateness to this intervention is, keeping the notes anonymous.



**Joanne Green** ✓ @MsJoanneGreen · 21h

@HelmeRachel #mathscpdchat I think that it needs to be something online that the pupils can access via their phones. Something modern.

... and to the last main question ...



**Dr Rachel Helme** 🎓 🌻 🍌 @HelmeRachel · 21h

#mathscpdchat Last question of the chat this evening. Do your department and /or colleagues explicitly discuss student voice, either as classroom talk or opinions on teaching and learning? is this part of your CPD?

... there was just one reply:



**Joanne Green**  @MsJoanneGreen · 21h ...

@HelmeRachel #mathscpdchat As a supply worker, I am rarely given INSET or other training - or even the school letters to know what's going on. I have never received explicit discussion about student voice other than give lots of rewards recently.

This was Rachel's closing message:



**Dr Rachel Helme**    @HelmeRachel · 21h ...

#mathscpdchat

That's it for tonight, it has been great chatting with you all about students voices about the teaching and learning of mathematics.  
Have a good rest of the evening!



**Miss**   @ed\_lead · 9h ...

Replying to @mathscpdchat and @HelmeRachel

Thank you Dr. Rachel Helme for holding the chat on these issues. I am not a Math specialist, neither I teach Math. I just enjoyed answering the questions around teaching and learning and connecting it to the general philosophical context.