

#mathscpdchat 25 September 2018

What is mathematical ‘play’? In lessons do you deliberately (for a purpose) provide opportunities for learners to ‘play’ mathematically?

Hosted by [@martynyeouk](https://twitter.com/martynyeouk)

*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 focused were:

- that/how mathematical play **builds valuable human skills and attitudes**;
- that **activity during the first stages of trying to solve a mathematical problem**, or investigate a mathematical situation, is usually close to ‘mathematical play’;
- **playing with unfamiliar materials** (manipulatives) in order to **get a ‘feel for’ possible questions and lines of enquiry**, rules and assumptions;
- participants’ own **personal experience of playing with mathematics** ... for example playing with construction materials (eg Polydron), tackling published puzzles;
- teachers ‘playing mathematically’ **in order to aid task design and lesson planning**;

- teachers **observing learners while they are playing mathematically** ... gaining insight into learners' knowledge, confidence and thought processes ... being surprised by what they see;
- **what learners can get out of mathematical play** ... for example, greater confidence in using numbers, improved reasoning skills in developing and evaluating strategies, the rewards of perseverance;
- **positive contributions to learning made by sessions of 'free play' with particular materials** ... play with Cuisenaire rods ... Gattegno's explicit guidance ... play with Dienes apparatus ... Dienes' explicit guidance (his six-stage theory of learning mathematics) ... play with multilink cubes;
- **sources of mathematical games** ... eg NRICH, ATM, MA...;
- putting together **collections of games and materials for games ('maths sacks') for young pupils to take away and play with at home**, thus engaging them and their families in enjoyable mathematical play;
- **'Mathematics Play Tables' in secondary-school maths classrooms** ... manipulatives that engage students in mathematical play ... positive outcomes.

A particularly interesting 'conversation' of tweets (between a primary teacher and a secondary teacher), about playing games as part of lesson preparation ... and what might be learnt about pupils by observing them play, followed from this tweet by [Heather Scott](#):



Heather Scott @MathsladyScott · 19h

The reason I 'play' maths is to get into the mindset of a particular class of students to understand if they will like a puzzle or problem I set them - e.g. thinking of this for a yr 7 class tomorrow: transum.org/software/SW/un...
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including this one from [Martyn Yeo](#):



Martyn @martynyeouk · 19h

Replying to @MathsladyScott

Have you used these "unmagic squares" before? How have you found pupils have taken to them?
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and these two from [Heather Scott](#):



Heather Scott @MathsladyScott · 19h

No, this is the first time I've come across them ... and after a short play I do feel I will give them to a yr 7 group tomorrow and observe what happens ... it's like the second stage of working out what works well for different groups
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Heather Scott @MathsladyScott · 19h

I often use the SET game as a starter of plenary to a lesson as it gets may involved trying to find the different solutions - and they are very happy even if they persevere and find just one of the solutions 😊 #mathscpdchat

Maths for Irishing

maths often get short of our can do mathematics but of all can truly flourish? I got #Water Meetings on January #Association of America. A will was published in the Ju through back based on this

Mary Pardoe @PardoeMary

Replying to @MathsladyScott

Yes. A retired President of the MAA agrees that play is a vital part of doing mathematics, as he explained in this Presidential Address: mathyawp.wordpress.com/2017/01/08/mat... #mathscpdchat

and this one from [Martyn Yeo](#)



Martyn @martynyeouk · 19h

Replying to @MathsladyScott

What is the set game please? #mathscpdchat

and this one from [Heather Scott](#)



Heather Scott @MathsladyScott · 19h

It is a daily puzzle from the New York Times: nytimes.com/crosswords/gam... sometimes you can get the right answers quickly and sometimes it's impossible ... I think if I thought more logically with a 'steady mind' I would get answers more easily #mathscpdchat

and this one from [Martyn Yeo](#)



Martyn @martynyeouk · 19h

Replying to @MathsladyScott

That does look great!

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and this one from [Heather Scott](#)



Heather Scott @MathsladyScott · 19h

It is fun - I would use it with yr 6 as it gives a great insight into which students are thinking in a way that suits this puzzle ... I often find students who are better than me at this sort of thing 🥰 #mathscpdchat

and this one from [Martyn Yeo](#)



Martyn @martynyeouk · 19h

Replying to @MathsladyScott

It's surprising sometimes how the students thinking can be so different to your own and you see things you wouldnt even contemplate! #mathscpdchat

and this one from [Heather Scott](#)



Heather Scott
@MathsladyScott

Following

Maybe by 'doing mathematics' we are all playing with ideas and conjectures in our mind re what we can and can't do and what we can invent and create? 🤔

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

Among the links shared were:

[Unmagic Square](#) which is a puzzle from Transum Mathematics, shared by [Heather Scott](#)

[SET](#) which is a daily puzzle from the New York Times, shared by [Heather Scott](#)

['Can You Solve My Problems?' by Alex Bellos](#) which is a 'casebook of ingenious, perplexing and totally satisfying puzzles' shared by [Martyn Yeo](#)

['Five Principles of Extraordinary Math Teaching' by Dan Finkel](#) which is a YouTube film of a TED talk by Dan Finkel in which he invites the audience to approach learning and teaching mathematics with courage, curiosity, and a sense of PLAY, shared by [Simon Gregg](#)

[Gattegno Maths Textbook 1](#) which is a free-to-download PDF reprint of Caleb Gattegno's classic 1970 work, shared by [Mary Pardoe](#)

[Mathematics for Human Flourishing](#) which is a Retiring Presidential Address given in 2017 by the retiring President of the Mathematical Association of America, shared by [Mary Pardoe](#)

[Zoltan Dienes' six-stage theory of learning mathematics](#) which is an article about stages of activity in learning mathematics, shared by [Mary Pardoe](#)

[Using Games in the Classroom](#) which is an NRIC article by Gillian Hatch taken from the introduction to 'Geometry Games' published by the ATM, shared by [Mary Pardoe](#)

[Math is Play](#) which is an entertaining TED talk by [Matthew Oldridge](#), shared by [Mary Pardoe](#)

[A PLAY TABLE in your mathematics classroom](#) which is a blog by a secondary mathematics teacher, describing how she sets up and uses a 'play table' in her classroom, shared by [Mary Pardoe](#)

[Using ATM MATs](#) which is a short film from the Association of Teachers of Mathematics (ATM) showing how to construct polyhedra using MATs with ©Copydex glue, shared by [Mary Pardoe](#)

[Isotiles](#) which are attractive triangle shapes, from the Mathematical Association (MA), that encourage students to create, investigate, analyse, calculate and reach their own conclusions, shared by [Mary Pardoe](#)