

MATHSTALK by AMSI Schools (Series 3, Episode 1):

‘Using Games to Engage Students at Home’

Speaker Key:

MG Marcus Garrett

MM Michael Minas

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MG Welcome to MathsTalk by AMSI Schools - the podcast that supports teachers, parents and caregivers with making mathematics learning both effective and engaging. My name is Marcus Garrett. I’m an AMSI Schools Outreach Officer. This is our first episode in Series 3 of MathsTalk, which we’ll bring to you over the course of Term 2.

As mentioned in the introductory episode we recently recorded for this series, [unclear] our national programme manager, Janine Sprakel, this series we will be providing ideas and practical tips for parents and caregivers as they seek to engage their kids with maths learning at home, a challenge that quite a few people are facing at the moment. We think the series will also help teachers as they plan and prepare materials for parents and caregivers as well.

This episode, we’re chatting with Michael Minas, one of our amazing past Choose Maths Teacher Excellence Award winners. Michael is the editor of the Prime Number journal for the Mathematical Association of Victoria and also the director of Love Maths Educational Consulting, which we’ll chat to you a little bit about further on in the show. Lovely to chat today, Michael.

MM Great to be here, Marcus.

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MG I thought we’d start by reflecting on your thoughts generally about what’s happening at the moment as parents and caregivers seek to navigate the learning of maths from home, many for the first time. We know that maths anxiety is something that afflicts many adults as well as kids. So what are your thoughts on what you feel parents, caregivers and teachers are facing at the moment and what they can do to help navigate this challenge at such a difficult time?

MM Yes, look. Obviously, there’s negatives happening in the world at the moment but I think it’s one that affords educators a really good opportunity because, as you said, Marcus, maths anxiety is a really big problem in our community, so not just in the students that we work with but also with our families. And I think that, if this remote virtual learning is done well, I think there’s actually some really good opportunities to have some real wins for mathematics in this time.

MG Okay, so what sort of philosophy or mindset would you encourage parents to have as they approach this?

MM The way I see it is that the best way to move forward is to not try to replicate a traditional school model and then just do it over a virtual platform with the difference being that the lessons are videotaped.

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That would just be an inferior version of what kids are getting from school.

The way I see it is this is a really good opportunity for engaging our parent community because a lot of the parents of my son's peers that we know through school and stuff, they spend lots of time supporting their kids in English and particularly in reading. Parents are very used to working in that space and I think, for a lot of families, supporting the child in maths is not something that they're used to doing or it's not something they do as frequently as they do in English.

So I think we need to be looking at this is a first dipping their toes in the water for some families. How we can make this a really positive experience for them.

MG I know, as a classroom teacher, I was very used to saying to parents, look, we'd like you to read with your kids at home. We'd like you to spend 10 / 15 minutes around bedtime just listening to them read. Even reading to them. But doing maths with them at home was not such a familiar routine that I often set up for my parents. And what I hear you saying is that's something that we'd encourage parents to try and think differently about and change.

MM Definitely. And I think, if we're going to be thinking like that, we need to recognise, one, that a lot of parents are not going to have content knowledge or the understanding of modern teaching practices and so we don't want to set them up for failure. We don't want to create a situation where we're asking parents to do something that they're not going to be able to do and it's going to end badly for the child and for the parent.

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I think we need to be looking at how can we, as the educators, design programmes that parents are going to be able to actively engage with with their children at home and for it to be a really positive worthwhile experience for all parties concerned.

MG So, if I'm a parent at home and I'm listening to this now, how do games and other activities fit into the picture with what you're saying there?

MM Yes. For me, I think the number one thing that schools should be promoting... And I think this is true at all times. This was as true in 2019 as it is today. I think it's trying to foster that love of mathematics. And the best way to do that at home is via games. I think that's the space where parents are going to be confident working in setting up that expectation that families are expected to be playing games with their children the same way that we expect them to be reading with their children.

That creates a lot of flow-on positive effects. One of them being it allows parents to see their children working mathematically and see all the amazing things that their children can do.

MG So fun is number one. What other benefits can you see of maths games? What else do they bring to students' learning experience besides that sense of engagement and enjoyment?

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MM The games that I would advocate using are games that are not speed-based games. Games that reward flexible thinking. But you also get the opportunity to learn from each other. And you would know this, Marcus, first-hand as a classroom teacher with lots of experience that sometimes you'll look at a game and you'll think, this is a great game but I'm not sure about these three or four kids. I don't know how they'll be able to engage with the game. But then what you'll find is, just by the very act of playing the game, that children learn from each other.

So they'll see someone else doing something and they'll say, I can make... Like you might say, how is this child going to be able to make 76? But then they'll watch their partner playing and they'll say, that's not that hard. $7 \times 10 = 70$. And then, if I use this card, I could add on six more and 76.

And, as teachers, sometimes we think we need to anticipate everything that kids are going to do and I'm sure parents would as well. And I think sometimes just letting them play the game and letting people learn from each other can be a real positive.

MG I love that because we all know, either because we've got formal education training or because we just intuitively see it in daily life, that, if we have to teach someone something, we're far more likely to learn it effectively ourselves.

MM And I think also the idea that games are motivating because with children the end goal is success in the game, right? And, again, if you're in a classroom you can write up a learning intention saying, you're going to learn about multiplying whatever.

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But the kids, they think they're playing a game. They're seeing the game as the end goal. The success in the game is the thing that they want to have. And so that builds in some motivation there for students to try and expand the range of strategies they can use because that will then help them to be successful in the game.

So the motivation comes from the game that they're engaged in and so that can be a really positive thing as a classroom teacher. But, even more so, as a parent, if you're a parent with little experience in education after you left formal schooling, then that's a really positive thing because, if you can have your child motivated and wanting to sit down with you and spend half-an-hour engaged in mathematics, that's half the battle already won.

MG I have a friend who I passed on a maths game to him to help his daughter on fractions just a few weeks ago and he actually said to me on the weekend, oh my gosh, Scoutie is just annoying the living daylights out of me. She keeps saying, "Can we play the 'Marcus Maths Game'?"

MM Yes. That's how you know you've had a win, right, when that happens. It's very, very easy in this time when people are confined to homes and stuff where it's very, very easy to slip into kids sitting in front of Netflix and one episode flowing into the next episode flowing into the next episode. Games have a benefit beyond the mathematical component as well of the social interaction and shifting the space where kids are spending their time.

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So I think, especially in this time, if you've got children that are motivated, that are saying, let's play the Marcus maths game, again, that's just a fantastic situation to be in.

MG Yes. You mentioned earlier that you would be less likely to encourage speed-based games. What about the role of competition? Do you think competition in maths games is good or bad? When should a competitive approach be used and when do you think it should be avoided?

MM That's a really great question and it's a question that maths educators have spent a lot of time pondering and researching. And I think it's quite clear now that speed-based games and activities are harmful to a fairly large proportion of our students. I don't think it's a matter of opinion. I think there's some really strong research that's been done that would indicate somewhere around a third of the kids that you work with, that's going to be the genesis of their maths anxiety.

If you've got a class of 24 kids and you're playing elimination-style fastest-person-to-shout-out-an-answer-wins games and you're rationalising it to yourself by saying, my kids love it, these kids in my class love it, you just have to be aware that there's also eight of those 24 kids, the statistics would say, not only do they hate that activity but you're actually actively turning them off mathematics.

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MG That's pretty sobering, isn't it?

MM And look, having said that, I think a lot of the games that I play when I'm working in classrooms and schools around Victoria, a lot of those games do have elements of competition in them. But, as I said before, I think the competition is more based around rewarding number sense and flexible thinking and creativity. And then I think it's just about, in a classroom setting, having a healthy classroom culture where students are okay to play with each other and to say, you won today, good luck. Maybe I win tomorrow, good luck. That sort of idea.

And I think that the same sort of thing goes for home environment. I wouldn't advocate losing every game so your child's constantly winning but I also think you need to be mindful of giving them a chance to have some success while they're playing and trying to make a bit of a balance there to give them something to reward the effort that they're putting in.

MG That's good advice, isn't it? If mums or dads are playing a board game with their kids, giving the kids a bit of a chance to get in a throw or get in a kick without letting them win constantly.

MM Like with my own children. I always find that 30% / 40% of the time I'll give them a win and make them earn it. I think that if you just win every time, well that's not positive. And, if you let them win all the time, that's not positive. You want to find a happy middle ground.

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MG So do you think there are some gender or cultural aspects of games that we need to consider? For example, are there particular types of games that you feel are more or less likely to engage girls and young women? What about for students for whom English is not a first language? We're obviously going to have some parents and families for whom English is a second language or who come from a very oral culture such as Australian indigenous students. What are some words of advice that you might have there for catering for a variety of students when setting games and activities?

MM All of the groups that you mention, Marcus, I think ultimately they all come down to the individual student. But I do think that there are some things that people need to be aware of. The research would suggest that competitive games can be particularly off-putting for female students when you look at large sample sized participants in a study.

But my personal anecdotal experience of working in classrooms is that I've worked with lots and lots of, say for example, upper primary girls that are disconnected and disengaged with mathematics. And I've had great success engaging them with competitive games.

But, again, I think it's about creating a safe space. You can have the exact same game being played in two different environments with the same person and that person's experience of that game would be very different in environment A compared to environment B.

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So, again, that goes back to what we were discussing before. I think that the onus is on the families at home to make sure that, when they're sitting down to play a game, a maths game with their children, that they make it a positive, rewarding, happy, light-hearted, fun experience, not one of point-scoring and putting people down.

And, again, I would just really urge to... I know we've already said it but I think it's worth saying a second time to just really steer clear from speed-based games because they really bring very, very little to the table.

MG Yes. We learn with our emotions, don't we? So, if we can associate something with feelings of happiness and fun and, particularly for younger children, engagement with our parents, that's something that is far more likely to stick in our brains and that we'll remember.

MM And along those lines, I'd encourage families to say, look, the first is to make sure it's a fun experience and the second thing is to worry about the learning. If you can't do both of those things, just concentrate on making it a fun experience for your children.

Students are just mini versions of you and I and, as humans, we do what we enjoy and so, if we can make that part of their day enjoyable, like you were talking about before, they're going to want to do it more. They're going to want to play those games more. And the learning will come while they're playing.

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MG What do you think would happen before and / or during a game in terms of helping parents who don't have that technical content knowledge, linking the activity to some kind of maths content [?]?

MM That's a really fantastic question. The first thing to say is to just be aware of taking a game and then changing the context of it and turning it into a mini-lesson. Then you're back where we started, which is traditional classroom but now we've just transported it back into the home environment. So I would say to parents, when in doubt, steer away from doing that.

But, when you're playing the games, obviously the role of the adult there is to try and draw out the maths and to try and make strategies or approaches clear to the people playing the game so they can see, that's a good way, I could have a go at doing that. The best way to do that is by some really well-placed strategic questions as things are coming up, but that's a hard thing to do and that's a hard thing for classroom teachers to do.

But parents who are dealing with financial stress and health issues and... You're going to have some families where you're going to have both parents are working from home during this time as well. That can be tricky.

But I guess my advice would be, if you're playing a game and you see your child doing something where you think, that would be a good situation where I could prompt them to think about maybe talking about what multiplication means...

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Say you're working with a Grade 2 student to say, do you know three and five? We could use them to make eight but we could also use them to make 15. Do you know how to do that? That might be a good opportunity to prompt that via some questions.

But, if you find yourself straying into a mini-lesson and what you're saying your child's not quite getting and you can feel yourself getting frustrated or you feel that the conversation's dragging on for longer than 30 / 40 seconds or a minute or two, I would urge you to just leave it where it is, put a pause in the conversation, maybe have a little bit of paper next to you and scribble down a note of what you wanted to talk to them about.

And then it's your job between that day and the next time you spend some time with them to maybe have a bit of a think again about, okay, so I had a go at talking about multiplication. Didn't go so well. And then have a think about, well, what could you do? What's another way you could have that conversation with them the next day when you're feeling fresh and they're feeling fresh?

And that also gives you the chance to go away and have a look on YouTube or talk to some other parents or whatever, get some advice or other note [?]. Some schools are going to have where you can contact teachers or you can't contact teachers. But it just gives you that chance to have a pause and again make sure that that learning moment is a positive thing, not a negative thing that potentially ruins the game.

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MG So, "when in doubt, leave it out" - go away, do a bit of research yourself if you can. I should make the point that our own Calculate website actually has content modules that will help parents if they are unsure so that they can just go away, dip their toe in and, very, very quickly and simply, find out a little bit about a strategy or an operation or some maths that they might not feel overly confident with and then come back once you feel a lot more confident about that.

Because what's really important... And I hear what you're saying. I think what's really important is that you don't stray down that road of, okay, this is starting to become a chore. We're confusing each other. We're frustrating each other. And that defeats the whole purpose.

MM I think a really good example of where that could happen would be for families trying to introduce a mathematical concept that maybe developmentally the child's not ready to have introduced to them. So you may be thinking, this would be a great time to talk to my child about ratios, and just not being aware that they're miles away from ratios. There's a whole bunch of other experiences they're going to need to have before they're ready to talk about ratios.

So, if you start a conversation about ratios and your child's looking at you with a puzzled look on their face and the conversations aren't going very well, if you pause it, go away and go to the AMSI website and have a look and say, hold on a second, ratios are being introduced in Year 7 and my child's in Year 2, no wonder they were confused about what I was talking about, then you know to just leave it.

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So, I think, again, to know some places where the resources are is a good thing. But what you said, Marcus, is a really good way of phrasing it. When in doubt, leave it out.

MG So you've got a website, Michael. Do you want to tell us a little about the Love Maths website and also a few of your favourite maths games? Just as an additional resource that parents can go to.

MM Initially, we didn't have any games up there, Marcus, but just in the last two weeks, as I said at the start, it occurred to me that this is a challenge for schools, for teachers, for principals, for parents, for children. I just thought it might be a good thing to start sharing some games up on my website. The games that I've shared are shared with the clear intended purpose of these are games that are great games to play at home with your child during this time.

So I'm sharing games that will go all the way from foundation to lower secondary levels. Every game that's up there is pitched to be used at home, so they're games that are simple rules, very little materials required. And, where there are materials required, we also offer suggestions of, if you don't have this, here's another thing that you could potentially use to replace it. Because we are aware that people's homes are not as well-stocked with resources as the stock standard maths classroom would be.

So, yes, simple rules, simple resources and really good opportunities for differentiations.

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So you know you can play the game with your child and say, that was a bit too challenging, and then there'll be suggestions for modified versions so you can scale it down or scale it up depending on your child.

MG That's great.

MM And they're all up there with videos, little five-minute videos, so you can watch and see how the game looks when it's being played. And the feedback we've got has been really fantastic. It's been shared around a lot and lots of positive comments coming from all over the world. We've got feedback from Germany, from Canada, from the US with people just saying they're playing them and really enjoying them.

MG Wow.

MM It's been great.

MG Can you just share the URL for that site, for your site, Michael?

MM The address is lovemaths.me/games. If you go to lovemaths.me, you'll get to the landing page and you'll be able to find it. But, if you want to go straight to the games, just /games. And it's also a YouTube channel that's got them all on there as well and that's just if you just search under my name, so Michael and Minas is M I N A S, you'll find all the games up there as well.

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MG Great. And we will put a link to that site on the AMSI website on the podcast notes for this episode. And also just to remind people too that the Calculate website also has a link to quite a lot of maths games that parents can play as well.

And, in fact, one of my colleagues, Cass Lowry, has just compiled a booklet of lots of the **CHOOSEMATHS** family night games that we've played with parents and caregivers in school communities over the last five years into one booklet that you can download and grab that one as well. So, lots of great resources there on both Michael's Love Maths website and also on Calculate.

Well, I think that's probably a good place to leave it. You've been listening to MathsTalk by AMSI Schools. My name is Marcus Garrett. I've had with me today Michael Minas, a leading maths educator and consultant who's had a great chat to us about the importance of fun and engagement and playing games with kids at home at this particular time with the first priority being on that fun and engagement.

The podcast notes from today's episode can be found on the AMSI Schools teacher support website, caluclate.org.au. And the accompanying episode notes will be some useful links and resources for teachers and parents so you can explore the ideas we've discussed today in more detail.

You can also follow us on Twitter @AMSIschools or on Facebook by searching for ChooseMaths, all one word. And tell us there, what maths games or activities have you enjoyed either playing with your kids or from your childhood or time at school?

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And I'm sure folks will be sure to check out your website, Michael, so thank you very much for your time today.

MM It's been my pleasure. Thanks for having me on, Marcus.

MG Thank you. If you're listening on Spotify or Apple Podcast, don't forget to like us as this really helps raise the profile of our podcast and helps us support more parents and teachers like yourselves. Please share us with your friends and colleagues. We're very keen to reach as many parents, caregivers and educators as possible at this challenging time for all.

We can be reached by email on the address choosemaths@amsi.org.au. Just put MathsTalk and your name into the email subject bar and ask or comment away. We would love to hear from you.

MathsTalk sound recording, production and editing are all completed at the AMSI Schools Unit. Preproduction and editing for this episode have been done by Claire Embregts and Leanne McMahon and myself. And, as usual, special thanks go to Lulu Nyrienda for looking after our publicity and social media and to Cass Lowry for handling our Twitter feed.

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Thanks for listening and we will catch you next time.

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