

# A FIRST LESSON WITH A YEAR 7 CLASS, MIXED ABILITY

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Laurinda Brown interviewed Alf Coles shortly after his first Year 7 lesson in September 1999, and transcribed the tape. Jan Winter edited the transcript for use with the PGCE mathematics group at the University of Bristol Graduate School of Education and the three of us sat down and did a joint edit for MT. What do you do in your first lessons of the year? What's the same, and what's different? We'd like to know. The voice is Alf's throughout but when he is describing classroom conversation his speech is preceded by '-' with student comments in italics:

Well, I'd just had Tom, my further mathematician, the lesson before. So I managed to pack him off before the others arrived and then I was in the corridor and some people were coming up wondering where C11 (sea, one, one) was. I told them to line up outside the door. They had obviously been to different lessons because they were coming in dribs and drabs. About eight of them had lined up and I got three boys to go in and sit down at a table. I'd known that I was going to bring them in in groups and tell them which table to sit at. When there were about 12 people in and there was no-one outside I told them to get their bags on the floor and their pencil-cases out. Then a few more people started arriving, so I told four to go and sit at a table and that way the room filled up with 25 students.

I said to all of them:

- I'd like you to put your bags on the floor and get your pencil-cases out.

There was one girl who'd come in last, who was faffing around at the back. I waited for her to get her bag on the floor and then get her pencil-case out and that all eventually happened. Just before that happened someone had asked if I was Mr Coles and I hadn't responded to that. I think someone else had asked me something which I also hadn't responded to. So, they were all there, and I was standing at the front and then they all went quiet:

- Welcome. My name is Mr Coles (which I wrote on the board). All your maths lessons will be in C11, this room, apart from one time when we'll be in the computer room. Welcome to mathematics at secondary school. One difference you

might find between mathematics at secondary school and at primary school is that, as well as all the skills and techniques like adding or multiplying or taking away that you will have learnt and will continue to learn, it's also about learning to become a mathematician. It's about becoming a mathematician and learning to think mathematically. What I mean by that is: if you're thinking mathematically then it's about noticing things about what's around you and it's about writing things down about what you notice. Often what you'll be writing down will be a question about something which you've noticed. Maybe you've seen a pattern: a question that mathematicians often ask is 'why'? You might spot a pattern and think about why that pattern works or make a prediction based on that pattern.

They were all just listening:

- We're going to be working as a group mathematically and one of the things that means is that there isn't a sense in which there's a right or wrong answer, because it's about learning and you often learn by making mistakes. It's about helping each other and helping each other understand what's going on and if we're going to be working as a group then we need to know each other's names. Put your hands up if you know the names of everyone in the room.

About three people did.

- One thing I want to work on, and I'm not sure we'll get there this lesson, but one challenge you can set yourself, is to leave this room knowing everybody's name.

I then asked the first person on the first table to stand up and say: 'I'm...', and she stood up and said: "*I'm Sarah*" with a theatrical gesture. The next girl stood up and I said: "*I'd like you to say: 'You're . . .'* and then say: *I'm . . .*" and she stood up and said "*You're Sarah and I'm Linda*".

- *You're Sarah, you're Linda and I'm Ami.*

This was producing some sort of subdued giggles between these girls, perhaps because of these gestures, but that didn't last very long.

- *You're Sarah, you're Linda and you're Ami. I'm Becky.*

We got to about six or seven people.

– Those people who think they've got it easy now, because they've done their names, I didn't say we were going to stop after one round. You could think about how many names will be said by everybody?

Then we carried on. Most of the class managed the task fine. That felt different, it had always felt very much more support had been needed in previous years. Then I did it and got everyone's name which produced a round of applause, which was rather bizarre.

– Does anyone else think they could do that?

Quite a few hands went up so I got one person to do it, then some more.

– Can anyone not do it?

A few hands went up.

– Can those who can do it offer anything about how you do it?

They didn't really have anything to say about that. I asked a few more people to do it and at this stage there were lots of hands up.

– OK, if you think you can do it, say it to your neighbour and while you're doing that I'm going to hand out your new maths books.

There was a kind of energy where people wanted to speak and would have been upset if they weren't allowed to. But that went away as people got into writing their names on their books. This felt okay, as they'd said what they wanted to say to their neighbour. My sense was that they had been genuinely learning names with each other.

– Something I haven't mentioned is about the rules of the classroom, but I'm sure lots of teachers have been talking about that (some girl mouthed 'all of them'). You've been in schools for 6 years and you know what sensible rules of the classroom are about. I am sure you are mature enough to understand what is expected of you. It will become apparent if you are doing things I am not happy with. One thing I have noticed is that some people were calling out, not putting their hands up. That is one thing I don't want you to do, because that will make it difficult if we are going to have discussions.

– One thing I do care about is whether you arrive on time.

– *What happens if we are late?*

– You make up the time in break time or lunchtime.

Quite an interesting question!

– Okay, a question I asked was "How many names would be said by everyone?" Has someone got an answer to that?

– 636.

– Okay, how did you get that?

– 26 times 26.

I wrote 26 times 26 on the board (I was included).

– Has anyone got any comments on that? Does anyone agree or disagree?

– *I'm not sure that's right because the first person only said one name.*

– *Not everyone said everyone's name for the 26 times 26.*

– Any other comments?

– *You've got to do 1 add 2.*

– *Yes I can see that that needs to be 1 plus 2 plus 3 all the way up to 26.*

So, I wrote '1+2+3+. . .+26?' on the board. I know there were a few other comments at that stage.

– OK, well, the question was 'Can you work out how many names were said?' I'll give you a couple of minutes to try and see if you can work on that and maybe see if you can work on a quick way of doing that.

Some of them asked if they could use a calculator to which I said "No". And some of them wrote 26 down to 1 and added them up. Some of them were doing things like adding the first four up and then doubling that. After a few minutes I stopped them and asked for what different answers people had got. We got a list of about 12 different answers. I just wrote them up at that stage.

– Can anyone give me a reason behind any one of your answers?

Some of them said that they'd just added them up but one girl said:

– *Well, I added up the first four and that came to 10 and then I thought that I needed 5 lots of . . . oh, no, that's not going to work. Oh dear.*

– That's a really nice example of how working together mathematically as a group and talking about how you're doing something, you can recognise where you've gone wrong.

– *Well, I did 26 shared by 2 to give me 13 and then I did 13 times 26.*

– OK, can you explain why you did that?

– *Well, some people said all the names and some people didn't say all the names and so it's sort of 13 times 26.*

– OK, could someone else, not Mark, say what they've understood him to mean by that?

Someone else didn't quite say average but again said in their own words this sense of some people saying more, some people saying less. I wrote out 1 plus 2 plus 3 plus 4 and said:

– So, what would you do on this one?

– *I'd do half of 4 is 2 and then 2 times 4 to give us 8.*

– *It adds up to 10, 1 plus 2 plus 3 plus 4.*

I can't remember whether it was me or someone else who then said "If we look back to 1 plus 2 plus 3 plus 4, what is the average of these ones?"

– *It's 2 and a half.*

There was a sense of "if you do 2 and a half times 4 it does give us 10".

– *We need to do 12 and a half times 26.*

I looked at them both and I think it was me who then said:

– But the 2 went to 2 and a half, so it could be 13

and a half times 26. Can someone work that one out? You could use a calculator for that one.

Then that gave us an answer, which was different to all the answers we'd had before.

- Could we test if this works for a smaller one?

We agreed to do 1 plus 2 plus 3 plus 4 plus 5 which would then be three times five which was 15.

This did seem to work and gave us the same answer.

There was about ten minutes to go.

- This seems like a really nice stage to be at. What I'd like you to do for homework is to write up what this problem was that we've been looking at. Write up what you've done to think about it, carry on working at it and we'll talk next time.

I was a bit unhappy about the homework, because I recognised that it was the first time they were going to write in their maths book. I felt that it might be inhibiting for some of them. I was aware that I would have liked them to have done some writing in the lesson, maybe getting them to have written out what the problem was.

There was a bit of time left and I wanted to do some chanting and some Gattegno chart work in their first lesson. After they had all written down their homework, I got them to pack away.

- Something that we'll often do is some oral work at the end, which you may be used to.

Quite often we'll be using this chart, where I might ask you to do something and I'll point to something and you'll have to chant a response.

We did some multiplying by 10.

- If I pointed to 6 what would you say?

- 60.

0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
1	2	3	4	5	6	7	8	9
10	20	30	40	50	60	70	80	90
100	200	300	400	500	600	700	800	900

I said "6" and some said "60" and we did that three times until it was up at the volume which felt appropriate. Then quite quickly we got to 0.6 and 0.03 and they were all able to do that. It felt pretty much immediate. On the 0.03 there was a stammer the first time I did it, but then after that it was pretty much there. So we went right off the chart, 900,000 went to 9 million.

- How are you doing it?

- I just go down one on the chart.

- How do you think you'd multiply by 100.

- I'd just go down 2.

So we did some work on multiplying by 100. I didn't do dividing by 100. I don't know why, because that would have been good to do as well. I then did some work on complements to 10. I said a number and they had to chant back the number that made it up to 10: e.g. 6, 4; 2, 8.

- You're all so good at the 10s, we'll try 100.

They gave an intake of breath but then it was easy.

- 60.

- 40.

- Why is this so easy?

- It's just the same, you add a nought on the end.

- You can do 1000.

Then I tried 650 and 750 but that was getting quite hard for them.

That was it and I let them out table by table.

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