AQA
Realising potential

Bluecoat Academy school started teaching the AQA Certificate L3 in Mathematical Studies in September 2014. Here, they share their experiences...

School in focus: **Bluecoat Academy, Nottingham**
Head of Maths: **Keely Platten**

AQA Certificate in Level 3 Mathematical Studies (Core Maths)

Case Study

About Bluecoat Academy

"We're a large inner city Church of England school with a multi-faith cohort. Bluecoat Academy has a split campus with two year 7's, 8's and 9's, with 150 students in each year. The sixth form is based at one campus and 450 students are studying Level 3 qualifications this year. Bluecoat Academy is introducing Level 3 Mathematical Studies at both campuses."

aqa.org.uk/core-maths

Why we chose to work with AQA

The main reason was **relevance** of the course. We could see the financial aspect being really relevant to our students, and there's a variety of options, you can choose from – **including papers for Graphical, Data or Risk Analysis**. As the course gains momentum we'll offer different cohorts of students the different papers, but at the moment we're just offering Graphical Techniques. Hopefully, dependent upon their other options, we can offer them **a variety of the optional units**. We really liked that aspect of it.

Also, it was the most detailed specification available and well ahead of the other boards. It included links to resources we could use and gave us a real understanding of what was involved in the course.

They had **excellent support** for any queries we had when we were planning our teaching, really helpful. AQA sent people out to school to see us at the end of last year, so we could really get to grips and get a good understanding of what we were going to be delivering in September.

We've moved our GCSE specification from Edexcel to AQA as well. So for the new GCSE with year 9, we decided that this would be a **really nice follow on** from moving to AQA.

If you need any support getting to grips with Level 3 Mathematical Studies give us a call on **0161 957 3852**, email **maths@aqa.org.uk** or tweet us at **@AQAMaths**

Graham Hall,
Qualifications Developer for Level 3 Mathematical Studies

Find out more about our new Maths GCSE at **aqa.org.uk/joinaqamaths**

Teaching Core Maths

How we started teaching it last year (2014-2015)

Last September we had two different cohorts.

A number of students at our Bluecoat Academy chose the L3 Certificate because they wanted to continue their maths studies after GCSE, they had tried A-level but found it too demanding. The L3 Certificate provided them with a really good 'in-between' option.

Students who chose the L3 Certificate at our second school, Bluecoats Beechdale, did so because they had a C in Maths, but not English. This certificate meant that although they didn't have the grades to study A-level Maths, they could still increase their knowledge.

How we're planning on teaching it next year (2015-2016)

We're delivering it as a two year course; students have had two hours a week over two years. Next year I'm looking at changing that. The main reason is Beechdale students only stay for one year while they resit GCSE English and Maths, which doesn't give them time to complete the L3. From September we're going to deliver it as a one year course and will increase the hours to three or four hours a week rather than two hours over two years.

Some have had doubles (where they've got their teeth into projects) and some have had singles. Depending on how your school is set up, either can work well.

All our lessons are delivered by our maths staff. I know people are considering getting non-specialists to deliver it, but our maths lessons are delivered by maths teachers. This year 44 students are studying Mathematical Studies across our two sites. This is quite a healthy number and only three or four have dropped out. These tend to be students who've left sixth form altogether rather than those who've just dropped out of maths.

What we learned from our first year of teaching and how we're applying it

In September 2014 we did a recap of the GCSE content as a lot of the L3 Certificate builds on that. In hindsight I wouldn't do that again. Students struggled to see the point of it and we didn't come up with enough ideas to extend that knowledge and differentiate it from GCSE.

In September 2015 I'm going to start our new cohort with the Fermi estimation. This will be new to them and I'll incorporate it in to the Finance content. I've chosen Fermi estimation because previous students have thoroughly enjoyed this topic. Students found the Finance module really eye opening. Particularly learning about national insurance, they thought if you had a job paying £30k a year, you took home £30k a year. They didn't know about national insurance, tax, or paying back your student loan. When we looked at budgeting, they all thought "I've spent about £600 a month on going out" and never realised they only had £50 left after paying the bills.

We've already created 1 and 2 year Route Maps that you can use to plan your teaching. Route Maps are customisable schemes of learning supported by teaching guidance, lesson plans, homework sheets, topic tests and other activities. Visit **aqamaths.aqa.org.uk/coremaths** and log in to find out more.

My tips for getting started with Core Maths

1 Go to a Core Maths Support Programme day course

Find out more about the programme here: **www.core-maths.org**

We're heavily involved with our cluster, which involves meeting and sharing resources. Having the opportunity to discuss problems and discover how other schools are dealing with them is always incredibly useful. It's really important to get support from your school to go out on these days. I would thoroughly recommend getting involved with other schools in your area and seeing what they're up to.

2 Start by teaching a new topic to your students, and remember it's not GCSE

As I said, we made the mistake of recapping GCSE work with the students and they weren't as engaged as if we had gone in with something completely new.

We delivered the GCSE content very similarly to how we would deliver it in a GCSE lesson, because that's what we're used to.

We need to relate our GCSE content to real life situations to help students relate and see the benefit of it. For example, when we did some box plots and cumulative frequency work, I got the students to compare our GCSE mock exams results with other campuses to see who had done the best. Then we compared the girls to the boys. They really got their teeth into that.

They were seeing some real life situations where they could use this to analyse different kinds of data, and we discussed the conclusions. At this point we had done a mock exam using a specimen paper. I noticed they were very good at the cumulative graph in a box plot, because we'd done this for GCSE, but they weren't as good at analysing it. We discussed it as a class before I gave them some silent time to write their conclusions, and then marked that. We did it as part of a project over a couple of weeks, getting the data and selecting what they needed. That worked quite well. We just need to come up

with more scenarios and situations through which we can adapt this kind of information and come up with better methods of collecting information than the internet as this is quite time consuming.

3 Involve local businesses to get that real-world context

We want to work with local businesses to help students see where this maths will be relevant and useful. I'm taking them to the Mini factory in Oxford for a tour of the production line. Mini are going to do a bit of work with us about how you finance a car. They're also going to talk to the students about how you could get a loan, what the APR is, the cost of running a car, the insurance, tax, new tyres, all the things that they're not particularly aware of. I would like to get more businesses involved and come up with some original ideas, rather than the banks and building societies students tend to think of when it comes to finance.

I know from going to one of the Core Maths support days that one school took their students to Wall Street (New York) to look at the finance district!

4 Get students to take notes and logs

This is one of the things I've struggled with, students not writing anything down. Coming from a maths teaching perspective, you tend to get students copying examples down in your lessons at Key Stage 3 and 4, and even at A-level, because you want them to have something to refer back to. If you pick up the students' books there aren't reams and reams in it, as you'd expect from other year groups.

But the students have found the discussion work really beneficial and they've all participated. They're all keen to find out more, but we need to work on how we reference that. Whether they write a log, or a summary at the end, they need to do something along those lines. I was concerned they weren't writing anything down, but talking to other subjects, that's what students do. I think we need to be a bit more relaxed and just go with it, they're still learning.

5 Download some useful resources

I've found these resources really useful this year.

- **The Core Maths Support Programme** are starting to put resources on their website. They've got lots of projects you can take time going through.

  www.core-maths.org

- **The NCETM** (National Centre for Excellence in the Teaching of Mathematics) have a community for early adopters' schools. Members of the community are uploading resources and once they have been accredited and checked, NCETM will upload them to the Core Maths website.

  www.ncetm.org.uk

- **The Nuffield Foundation**. We've taken bits from various places, and adapted them as best suits our needs. The financial and data bits in the L3 advanced resources are good.

  www.nuffieldfoundation.org/nuffield-mathematics

- **Suffolk Maths**. We've taken bits from there that have been quite useful, like some of the contextual problems, there's a problem solving section and they've got some Fermi problems.

  www.suffolkmaths.co.uk

- **Big Stupid Questions** volume one and volume two, (you can find them on Google). They're PowerPoint documents with lots of Fermi questions like "how many hairs on your head?" and "how many loo rolls you use in your life time" which was quite interesting.

  Google: 'Big Stupid Questions volume one'

6 Work collaboratively in your area and let's all share

In our Nottingham cluster there's myself at Bluecoat, Minster, Tuxford and Lincoln College. Minster is one of the maths hubs. Between us all, we've created a website on the Minster portal where we can share our resources, which is interesting because we've all delivered different parts. We've broken down the AQA specification into different parts and uploaded resources to help. Its just what we've done this year so it's still a work in progress.

7 Attracting students to Core Maths

Do some work around the promotion of this subject. Our problem, was that our Year 11 options evening was held before the L3 Certificate was accredited so I couldn't include it in our prospectus.

I need to include it in this years' prospectus, but in the meantime, I've been in to Year 11 to promote it. I need to get the students currently studying it to get out there and promote it to the others to increase the numbers that are currently studying it.

8 Tracking progress

Tracking pupil progress and assessments is something we need to work on. Our management team are keen on us writing down the expected grade for the end of the Key Stage every half term, so they can track progress. I don't really know this so they've let me give an 'attitude to learning' grade. We did a mock exam at Christmas with one of the specimen papers. As the grade boundaries are not yet available, I gave them a percentage and used the A-level as a guide (80% was an A, 70% was a B and so on).

As a cluster we're developing assessments to do with the students next year. We're going to bring them all back together, look at student marks across the schools, and create a grading system. But assessment and tracking pupil progress is definitely something we need to work on. As I've said, we're going to deliver it as a one year course because it meets the needs of our students better than the two year model. It's not too bad with our L3, but our L2's are studying it for a year, and they're gaining a lot of experience and life skills from doing it, but they're not actually getting anything at the end of it. This is an issue because they'll go on to employment, or a different college if they don't get their maths and english, rather than coming to us for their L3. Hopefully we'll retain many of them, and take them into Year 13, where they'll get the AS equivalent at the end of that.

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9 Bring employers in to speak to the students

We need to relate content to real-life experiences. I want to get more employer involvement to make it more relevant for the students, and show them what's out there, the more abstract the better. I think they think of maths in terms of finance and accounting, or a maths teacher, rather than all the other jobs that involve maths.

Having someone external coming in to speak to them would be really beneficial. It was something we were trying to look at in our cluster, maybe getting a conference centre where we could get different employers in and all our students could speak to the different employers. They could do mini workshops throughout the day about where they use maths.

10 Project working – get them to think

I want to try and get a longer project working, covering a number of topics, so they bring their skills together and have to think a bit more about what they need to do. As this will happen when they get jobs, they're not going to be told what to do; they need to think a bit more for themselves. So we're trying to make them more independent and able to use their problem solving skills.

11 Remember that maths is about the real world

One of my Year 12's said they'd had no clue about what was going on in the real world. It shows that although we teach them maths up to GCSE, how many of those skills will prove useful in later life? Core Maths has really opened their eyes.

aqa.org.uk/core-maths

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