

BLENDED LEARNING AND MATHS

Home learning approaches – case studies

Since lockdown in March 2020 Hampshire schools have been developing their home learning methodologies. These have changed as the lockdown period extended, schools tried new learning platforms, Year 10 and Year 12 students returned to school.

The following are a selection of approaches taken along with reflections regarding what aspects of learning are covered and what has been missed. These may help Heads of Mathematics reflect and review home learning before September, in the event of a partial or local lockdown. Also included is a full case study from Crestwood College, who have been offering live lessons since Easter, with links to clips from their lessons exemplifying their approach.

Develop remote education so that it is integrated into school curriculum planning: Remote education may need to be an essential component in the delivery of the school curriculum for some pupils, alongside classroom teaching, or in the case of a local lockdown. All schools are therefore expected to plan to ensure any pupils educated at home for some of the time are given the support they need to master the curriculum and so make good progress.

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What is the rationale for your home learning approach? Has it changed?

Here schools share their thoughts on new learning versus content already covered; the use of maths packages and websites already available; teacher inputs via google classroom, Loom and other platforms; how long the work should take.

School A

For the two weeks before Easter we set tasks based on topics they had already covered. We used mymaths for KS3 and Mathswatch for KS4.

After Easter we decided to continue with new content but to carefully select which topics would be suitable for home learning. This means that there are some units of work that we would usually have covered (e.g. transformations and constructions) that we will catch up on when back in school. As a school we have not been delivering any live lessons and so all of our lessons have been mymaths based for KS3 and a combination of mathswatch and corbettmaths for KS4. Teachers are available to answer questions via email or google classroom message if students get stuck.

In KS3 we have also used some google quizzes and mathsbox 20 question sheets to break up the lessons. In year 7, 8 and 9 students are set a lesson for each lesson of maths that they would have on their timetable. This is shared by their class teacher on the morning of the relevant day. We are aiming for about 45 minutes per lesson.

In KS4 we have also had one revision-based lesson per week to give students a break from new content and ensure that key skills are practiced. This has been mathsbox 20 questions for year 9 and alternating between mathsbox 20 questions and onmaths online practice papers for year 10.

Year 10 followed a similar system as the other year groups until the 15th June when face to face sessions started. Now they are set their whole week's lessons on a Monday with a deadline of the end of the week. This is to enable them to work around their sessions in school as these are not necessarily following their usual timetable. On the week where they have their 2 hour maths session in school they are only set 2 maths lessons for home learning so that they still only receive the 4 hours of maths that they would usually have on their timetable.

We have recently started to produce some help videos of our own to support years 7, 8 and 9 since they aren't receiving any face to face sessions. These videos have been going out at 12:00 each day to try to troubleshoot any difficulties or misconceptions that students might be having with the lesson for that day. Additionally, some teachers have been making videos of their own to help or feedback to their classes.

School B

We chose a weekly "diet" of 5 "lessons" that included the following

2 x CorbettMaths/Dr Frost video plus textbook exercise

2 x MyMaths lesson plus online homework

1 x Basic Skills task (mixed bag of questions on a variety of topics that have been previously covered – retrieval practice.)

Each lesson would be estimated to last approximately 45 minutes with extension tasks available where appropriate

Each week's learning was scheduled to post on google classroom every Monday morning along with a pre-recorded video message from the class teacher on Loom (<https://www.loom.com/>) The purpose of the Loom video was to give an overview of the week's upcoming learning, pointing out any salient teaching points, warning of any potential pitfalls, giving whole class feedback and providing encouragement including "shout-outs" to praise-worthy individuals.

These Loom videos can be accessed at any time in the week, giving it an advantage over "live" lessons but having the obvious drawback of no interactivity with the students. (The very fact that many colleagues have young families at home led to the whole school decision not to offer live lessons.)

Students were encouraged to contact their class teacher via google classroom or email where difficulties occurred, but there was no formal "occasion" for support, relying instead on tutor phone calls home where concerns were raised.

In the event of a local lockdown in the future, I am led to believe that there would be an "expectation" for our school to provide live lessons.

School C

We went to setting 3 tasks for Maths at the start of the week after the first few weeks. We had a lot of parent feedback regarding workload and students struggling to keep up with all their subjects These 3 tasks consist as follows...

Task 1: New content. Delivered by Mathswatch/HegartyMaths tutorials or teacher recorded lessons (questions done on one of the first two though)

Task 2: Key skill consolidation and practice. Normally 20 questions with mixed core key skills (often repeated a style for a few weeks)

Task 3: Problem solving task or higher level mastery task, depending on the set.

We find a bit more engagement when lessons are recorded by their teachers but this doesn't motivate as many as we wish

School D

We set each class MyMaths tasks to be completed over the week. We use the feedback function to give each student individual comments on their successes. Each class also has a google classroom where additional tasks are posted.

We began online lessons after the Easter break and have continued to provide them each week. We record our lessons as they happen and then post the recording to the google classroom - this enables students to watch them at a time that suits or to watch them again for clarification.

MyMaths tasks are set weekly, in addition each class has 2 live online lessons each week.

We anticipate that the tasks and lessons will take the students at least 3 hours per week.

Through the google classroom we set optional additional challenges, quiz and exam questions.

School E

We have used Hegarty Maths from the beginning of the lockdown. Some students have been sent home learning packs. Students are able to learn new topics independently and send messages to teachers when they are having difficulties. Teachers can see how long students take to complete a task and the number of attempts at a particular question. This has been ongoing with work set weekly on a particular day.

Work is set every Monday with an estimated 2-3 hours of work to be completed each week

School F

We have used maths watch as they have videos with each topic. We have also started to record lessons and use videos from other areas such as Corbett Maths.

The approach has been consolidation of work, we have not set new tasks.

Tasks were set in line with the students' timetables and expectation was around 30mins.

School G

Teachers use whatever mechanism they are comfortable with. Includes on-line lessons (Zoom, Teams); Teaching videos (MathsWatch, Corbett Maths, Maths genie, Dr Frost), Teacher videos on YouTube (New learning particularly for A Level), Teaching PowerPoints, Worksheets.

All set on SMHW daily for either 4 or 5 days/week (depending on timetable). About 50 minutes/day

It is generally all going well with the students who engage. They prefer videos that can watch in their own time. We do not stick to lesson times as many students share devices and so it doesn't work for them. Most who want to learn are able to achieve well.

Communication is key and different when working remotely.

We also wanted to know about delivering a 'lead' lesson and 'wash-up' sessions for pupils who are struggling or falling behind:

Yes, the first lesson works through all the skills needed in order to be able to complete the MyMaths tasks. The second responds to difficulties - either emailed in by students, mistakes made on Quiz that are set or from looking at results on MyMaths

Students who struggle always have the option of staying on at the end of a live lesson. Our Learning support team (who attend our live lessons) also hold 1-1, 1-2 live sessions for students who need to go through things again.

Generally new content for first quarter of the lesson then consolidation for the rest.

'Wash up' session dependent on the teacher. Some have questions emailed or on SMHW and respond student by student, others hold on-line lessons and students join if they want help. Other make videos of worked solutions for questions not completed well by the class.

We have started to give feedback via video recordings or notes left on maths watch.

The HIAS maths team have discussed and promoted mathematics pedagogy through subject leader meetings and courses.

We were interested to know what aspects of maths pedagogy that are going well? e.g. fluency and consolidation; using whiteboards for sharing; teacher modelling; visual representation.

Modelling - we purchased Deco boards to enable live modelling in the same way as if you were writing on the board in class. The boards allow us to respond to any misconceptions that appear in the chat function.

Fluency and consolidation - in the live lesson students use the chat function to answer questions - they are getting really efficient at showing their workings in that way too. Jamboard is also used on occasions for students to share and model.

We use images to support the understanding of Mathematical language and as part of our modelling. E.g. number lines, bar modelling

Year 10 students seem to be appreciating the online practice papers as it is giving them greater exposure to GCSE questions and what an entire paper will be like. The only downside is that OnMaths (the site we are using) has a video walkthrough linked next to the paper.

This has definitely helped a lot (but not all) of our students to develop greater resilience and independence. They have become more familiar with our online learning resources and therefore will hopefully feel more comfortable in engaging with these when revising or working independently in the future. Equally we recognise that this isn't the case for all students.

A lot of fluency and consolidation. A lot of recap of previous topics in addition to new content has been set.

Trying use white boards or modelling when we make the videos.

There are some things that are trickier to do through home learning such as problem solving. One teacher fed back that they set an Nrich task 10 minutes before his online lesson and then the students shared their starting points and then worked through the task after having discussed it.

Models and images may not have been seen as regularly as when students are taught face-to-face. Discussing alternative methods, mathematical vocabulary and hearing 'mental strategies' again may have dropped away. Topics like translations and graphs can be tricky when students are working from home.

And finally ...

Are there aspects you feel you need support with?

Re-engaging and supporting students who have completed nothing during lockdown. They will be much further behind their peers and so will require additional support to catch up but are maybe inclined to reject that support and additional work because they are now in a habit of not working and it may seem like too big of a mountain to them?

This is going to be a challenge for all schools, however assessing what students can and can't remember then building on that starting point is what good teachers do all of the time. We must be mindful to have a positive 'can do' attitude with the students.

Questions for Heads of Department (with SLT) for September

Home learning

- Will there be a planned uniform approach to home learning in your department (school) in the event of future lockdowns?
- Have you mapped online learning against your curriculum maps?
E.g. one school is referencing mathswatch against their overview in case of students being at home; if teachers are absent they are going to see what Oak National Academy are going to produce (curriculum maps available now for their new academic online lessons) and do a similar thing.
- What is the potential for lead lessons followed by consolidation for future lockdowns
If a bubble is in lockdown this means that teachers don't need to be in front of a camera every lesson. It also means that students in such a class do see a maths teacher and can get help. Also an option if teachers are shielding / isolating.

Engaging pupils

- How will you engage students who have missed lots of work?
E.g. collaborative group work, matching tasks, low stakes tasks, hands on real-life problems.
- How will you help students to remember?
E.g. Highly receptive and adaptive teaching plus track back to the previous year's curriculum and drill down to retrieve big ideas and prior knowledge in a practical and conceptual way, rather than practising procedures.
- What strategies do you have in place to engage them if it happens again?
I.e. What can we do when students are back in school to encourage them that they need to engage with home learning, for example, some mentoring groundwork?

Plan on the basis of the educational needs of pupils: Curriculum planning should be informed by an assessment of pupils' starting points and addressing the gaps in their knowledge and skills, in particular making effective use of regular formative assessment (for example, quizzes, observing pupils in class, talking to pupils to assess understanding, scrutiny of pupils' work) while avoiding the introduction of unnecessary tracking systems.

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These areas will continue to be discussed at local subject leader meetings which will be online during the first half of the autumn term.

With thanks to the Heads of Mathematics for their candid replies:

Crestwood College

Crookhorn College

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Ryde Academy

The Mountbatten School

Wildern School

Yateley School