Nether Stowe School
The Mathematics Curriculum

Curriculum intent: our aims and values

The mathematics department at Nether Stowe prides itself on delivering a pupil-focused curriculum with the underpinning value that no learner is left behind. The learning of mathematics is analogous to building a wall; Teaching topics in a sequence that builds up a deep understanding of the overall concept. Decisions about whether to progress through the programme of study are made based on the security of pupils' understanding and their readiness to move onto the next stage. The mathematics department aspires to equip our students with critical thinking skills that they can apply to problems across the wider curriculum and help to develop enquiring minds.

Our curriculum for both key stage 3 and 4 is a model of progression within a wider picture and is designed to be adaptable to the prior attainment of our pupils at each stage. Within each unit of work, key learning points have been sequenced and there is no expectation that each group will achieve every single point during that year. Pupils are given the time to frequently practice new skills and become fluent in the fundamentals of mathematics so that they can recall and apply knowledge rapidly and accurately. Once fluency has been established, pupils develop their ability to reason mathematically and solve problems by applying mathematics to a variety of nonroutine problems.

For key stage 5, we have chosen to offer both A Level Mathematics and Further Mathematics. A Level Mathematics continues to be the most popular choice of A Level qualification nationally and facilitates entry to a wide variety of higher education courses. For pupils who have a keen interest in progressing further into the study of mathematics, physics, programming or engineering, A Level Further Mathematics is taught alongside A Level Mathematics as a parallel curriculum.

Curriculum Implementation

Knowledge is seen as underpinning and enabling the application of skills, although the latter are often taught alongside knowledge. The teachers of the mathematics department do not perceive a tension between knowledge and skills, and instead see them as intertwined. Within mathematics there are key skills that need to be mastered before applying them to more enquiry-based work. To gain fluency of these skills, it is essential that our pupils have the opportunity for repeated practice. Knowledge organisers are created with the information needed to master ten key skills each half term appropriate to the ability of the pupil. Home learning tasks and do now activities give our pupils frequent practice of these skills.

All teachers of mathematics use both formative and summative assessment to adapt their planning according to the emerging needs of the group. The sequence of lessons may vary from group to group, but all will be working on the same unit at the same time. The key learning points have been sequenced in the scheme of work so that there is a common understanding of the learning that precedes and follows what is currently being taught.

Within lessons, differentiation is not necessarily offering harder questions. It is more important that pupils move from being fluent in a new skill to working on an enquiry-based task where they must think harder, explain their reasoning and solve nonroutine problems.

At key stage 4, pupils are exposed to exam-style questions regularly and teachers use live modelling and examples of “what a good one looks like” to develop exam technique. Familiarity with a wide range of exam questions increases the likelihood that pupils will remember the steps that they have been taught and make connections between similar types of questions.

The curriculum is ambitious for all our pupils, including disadvantaged pupils and those with SEND, through the provision of multiple pathways and customisable content. Knowledge and skills are revisited regularly so that there are ample opportunities to strengthen understanding and fill any gaps in knowledge. This means that pupils are not left behind and have ample time and opportunity to build a solid foundation for future learning. The planning of the curriculum is responsive to what pupils already know and can do and is not limited by prior attainment and expected progress.

How do we monitor and evaluate the impact of the curriculum?

Regular progress checks are an opportunity to identify misconceptions/gaps in learning and adapt teaching. Milestone tests assess both new learning and prior learning so that teachers and pupils know whether what has been taught has been remembered and can be applied to a variety of problems.

After a progress check or a milestone test, pupils are given written feedback and teachers annotate their scheme of work with any gaps in knowledge that are common to the group so that this can be addressed in future planning. Following a milestone test, lessons take place where common misconceptions are revisited, and work is upgraded by the pupils. Recording of percentage scores and grades means that progress can be monitored and enables teachers to check the progress of disadvantaged pupils and those with SEND. In-class support is put in place for pupils who are underachieving.

Do now activities are used for retrieval practice and to assess the impact of home learning. The teacher will identify any fluency topics that require some explanation through the assessment of the do now activities. Red zone activities are used regularly as an opportunity for independent practice and for teachers to assess the impact of the learning that has taken place during a lesson or a sequence of lessons. Within lessons, all work completed is either self-assessed, peer assessed or live marked by the teacher. No questions are left unmarked so that the pupils are clear about whether they have understood the work. Care is taken to mark thoroughly and regularly during a lesson.