Royal Free Hospital Children's School
Secondary Maths Policy
June 2024

CONTENT

Outline of needs

The Royal Free Hospital Children's School caters for children who have physical medical needs and/or a diagnosis of mental health problems associated with severe anxiety disorder, trauma, chronic school anxiety or phobia, parental separation anxiety, depression, self-harm or eating disorders.
We offer alternative and flexible options, such as dual roll education with their mainstream school or full-time hospital education, which may at times be more appropriate to a pupil's physical or mental health needs. These pupils follow, as closely as is appropriate and practical, the same curriculum as their peers. Individualised Learning Programs are in place for a number of students whose previous school attendance has led to huge gaps in their maths learning. Learning Support Assistants are deployed appropriately and lessons are planned collectively by staff so that differentiation is managed effectively.

Statement of aims

- To provide opportunities for pupils to develop practical skills and understanding of Mathematical concepts and facts
- To help pupils observe and recognise mathematical patterns and relationships
- To provide opportunities for pupils to review previous learning, to reinforce current skills or extend their Mathematical development

- To give pupils confidence in their own mathematical knowledge and skills, and their ability to use a range of methods and techniques
- To encourage pupils to discuss mathematical ideas with each other as well as being able to work independently in a range of contexts including use of ICT especially in Statistics and Graphs.
- Cognitive Assessment Tests are used in the first week of admission. These are used to inform teachers of baseline maths level and lessons are planned immediately and differentiated accordingly.

Meeting the requirements of the National Curriculum

Pupils continue to follow the Programme of Study for Mathematics even though this is no longer statutory.
There are a number of key concepts that underpin the study of Mathematics. Pupils need to understand these concepts in order to deepen and broaden their knowledge, skills and understanding.

Competence
- Applying suitable mathematics accurately within the classroom and beyond.
- Communicating mathematics effectively.
- Selecting appropriate mathematical tools and methods, including ICT.

Creativity
- Combining understanding, experiences, imagination and reasoning to construct new knowledge.
- Using existing mathematical knowledge to create solutions to unfamiliar problems.
- Posing questions and developing convincing arguments

Applications and implications of mathematics
- Knowing that mathematics is a rigorous, coherent discipline.
- Understanding that mathematics is used as a tool in a wide range of contexts.
- Recognising the rich historical and cultural roots of mathematics.
- Engaging in mathematics as an interesting and worthwhile activity.

Critical understanding
- Knowing that mathematics is essentially abstract and can be used to model, interpret or represent situations.
- Recognising the limitations and scope of a model or representation.

These are the essential skills and processes in mathematics that pupils need to learn to make progress.

Representing
Pupils should be able to:
a) Identify the mathematical aspects of a situation or problem
b) Choose between representations
c) Simplify the situation or problem in order to represent it mathematically, using appropriate variables, symbols, diagrams and models
d) Select mathematical information, methods and tools to use.

Analysing
Use mathematical reasoning. Pupils should be able to:
a) Make connections within mathematics
b) Use knowledge of related problems

c) Visualise and work with dynamic images
d) Identify and classify patterns
e) Make and begin to justify conjectures and generalisations, considering special cases and counter-examples
f) Explore the effects of varying values and look for invariance and covariance
g) Take account of feedback and learn from mistakes
h) Work logically towards results and solutions, recognising the impact of constraints and assumptions
i) Appreciate that there are a number of different techniques that can be used to analyse a situation
j) Reason inductively and deduce.

Interpreting and evaluating
Pupils should be able to:
a) Form convincing arguments based on findings and make general statements
b) Consider the assumptions made and the appropriateness and accuracy of results and conclusions
c) Be aware of the strength of empirical evidence and appreciate the difference between evidence and proof
d) Look at data to find patterns and exceptions
e) Relate findings to the original context, identifying whether they support or refute conjectures
f) Engage with someone else's mathematical reasoning in the context of a problem or particular situation
g) Consider the effectiveness of alternative strategies.

Communicating and reflecting
Pupils should be able to:
a) Communicate findings effectively
b) Engage in mathematical discussion of results
c) Consider the elegance and efficiency of alternative solutions
d) Look for equivalence in relation to both the different approaches to the problem and different problems with similar structures
e) Make connections between the current situation and outcomes, and situations and outcomes they have already encountered.

These key concepts and processes are taught through 6 Attainment Targets –

Number
Algebra
Geometry and Measures
Statistics
Probability
Ratio & Proportion

Pupils will be given opportunities to communicate their learning and apply what they have learnt to other areas of the curriculum and their lives in general.

Planning

Secondary Mathematics sessions are allocated 3 hours on the weekly timetable, an equivalent of 15% curriculum time. As in mainstream schools, teachers aim for pupils to achieve the grade or national curriculum level appropriate to their age and ability. However, these expectations are qualified by the teacher's initial and continuous assessment of pupils in his/her care.

Cross Curricular Themes and Skills

Cross-curriculum dimensions provide important unifying areas of learning that help pupils make sense of the world. These include identity and cultural diversity, healthy lifestyles, community participation, enterprise, technology and the media, creativity and critical thinking. Teachers of Art, Science and Enrichment liaise with the teacher of maths where there are common topics e.g. equations, coordinate geometry, density, speed, ratio & proportion, financial planning and databases.

Key Stage 3 & 4

Pupils who join in Years 10 and 11 are offered the opportunity to take Foundation or Higher Level GCSE Mathematics with the exam board Edexcel. As a school we recognise the enormous life chances we are able to offer our young people by providing them with an environment in which they can successfully take these exams. Our decision to offer these courses to vulnerable young people inevitably means that in such a small group the needs of the pupils will lead what is taught. Key Stage 4 pupils are also offered Entry Level Certification with Edexcel when the teacher has assessed that access initially to GCSE for a pupil would be too difficult. Sometimes pupils access both courses in tandem if they are borderline GCSE. Key Stage 3 pupils follow the Programme of Study as outlined above.

Key Stage 5

A-level maths teaching can be offered on the ward and in the classroom. As well as teaching on the ward practice/mock papers are set and marked before discharge for short stay patients. In the event that the paper is not returned to the student arrangements are made to post or email the marked paper to the mainstream school/college or to the home of the student. Key Stage 5 students on the ward are also invited to join maths lessons in the classroom.
Career advice/guidance is offered to all patients over the age of 16. This includes those not in education, employment or training.

Short-Stay Pupils

Short-stay pupils from the ward may attend the classroom. A brief discussion with these pupils enables the teacher to make a broad assessment of their ability. Using that informal assessment the teacher will decide whether the short stay pupil joins in the planned secondary Mathematics Curriculum session or is offered an alternative individual contingency lesson to work on alongside the group. In addition if the child arrives in class with work set by their own mainstream school then this will normally take priority.

Mixed Age Teaching Groups and Classroom Management

Planning is prepared in anticipation of a mixed age, mixed ability group. Pupils will be taught within the group most appropriate to their current level or grade. In addition, pupils will receive individual one-to-one support from a classroom assistant or teacher as deemed necessary.

Pupils taught on the ward

Pupils are offered access to any aspect of the Mathematics curriculum. Teachers are able to access related websites and make an initial judgement through a discussion with the pupil in order to ascertain the pupil's level of ability, in the context of their medical needs. There is a bank of worksheets, exam papers and maths equipment available to all ward teachers. The nurse allocated to each patient is now recorded on the teacher handover sheet.

Homework

Homework is optional for short-stay pupils but all Day students are encouraged to engage in homework whilst attending the school. For these students homework is set at least twice weekly. Both paper and online homework via Maths-Genie and Mymaths is set. For those taking exams it is generally considered mandatory. For other pupils homework is negotiated according to their physical and mental health.

Every Child Matters

Having confidence and capability in mathematics allows students to develop their ability to contribute to arguments using logic, data and generalisations with increasing precision. This in turn allows students to take a greater part in a democratic society. Becoming skilled in mathematical reasoning means students learn to apply a range of mathematical tools in familiar and unfamiliar contexts.

Enjoy and achieve

Mathematics can be enjoyed as a worthwhile activity for its own sake and as a powerful tool in a wide range of applications. Enjoyment stems from the creative and investigative aspects of mathematics, from developing mathematical ways of perceiving the world and recognising underlying structures and connections between mathematical ideas.

Mathematics is a subject that empowers students to prove results. Students develop their problem-solving, decision-making and reasoning skills through working on a range of tasks.

Be healthy

Mathematics enables students to understand the numerical data related to becoming and staying healthy. Monitoring nutritional intake, blood sugar levels and cardiovascular health are all examples where mathematics assists understanding and can lead to making healthy decisions in particularly in a hospital school. For example a child is taught how to work out the time taken for a liquid medicine to be administered by infusion given the rate of milliliters per hour. By becoming financially capable, young people are able to exert greater control over factors affecting their health such as housing and money management. Strategy games and logic puzzles are an important part of maintaining mental health.

Stay safe

Understanding risk through the study of probability is a key aspect of staying safe and making balanced risk decisions. Students learn to understand the probability scale and use it as a way of communicating risk factors. They develop an understanding of how data leads to risk estimates. By understanding probability and risk factors young people are able to make informed choices about investments, loans and gambling.

Achieve economic wellbeing

An understanding of mathematics, and confidence in using a variety of mathematical skills, are both key to young people's ability to play their part in modern society. The skills of reasoning with numbers, interpreting graphs and diagrams and communicating mathematical information are vital in enabling individuals to make sound economic decisions in their daily lives. Mathematics skills and habits of mind are highly prized by many employers and mathematics is a gatekeeper to many careers and professions.

Make a positive contribution

Having confidence and capability in mathematics allows students to develop their ability to contribute to arguments using logic, data and generalisations with increasing precision. This in turn allows students to take a greater part in a democratic society. Becoming skilled in mathematical reasoning means students learn to apply a range of mathematical tools in familiar and unfamiliar contexts.

Teaching and learning styles

A variety of teaching strategies are used to give pupils a range of experiences through, AfL tasks, high order questioning to extend thinking, problem solving and peer work; in a group or pairs,

Personalized learning – including SENDs and Gifted and Talented

Teachers differentiate teaching and learning according to the needs of the students. This will include differentiation by resources, task, group, outcome, teacher intervention and teaching style.

The class teacher will also have to consider individual needs as these present themselves on the day (e.g. cannot use their writing hand due to cannula insertion, or upset due to a meal plan etc).
Lesson objectives may need to be modified or an alternative curriculum provided at short notice to accommodate all needs. At all times, the class teacher's priority will be to ensure the 'best curriculum match' for the range of individual needs present on the ward or in the classroom during that particular session. The over-riding aim is to maintain a secure, welcoming and stimulating educational environment which will contribute to the pupils' recovery.
Mathematics teaching is fully committed to the principles of inclusion and maximising the potential of all children. We have an ongoing commitment to review our provision, curriculum content, attitudes and expectations to ensure we address the school's Equality policies.

Links with mainstream schools and inclusion opportunities

The Headteacher, Deputy Head or Personal Tutor contacts the pupil's mainstream school, to discuss, and request information on, the pupil's knowledge and skills in Mathematics.
Where a child is taking an external or internal public exam there will be liaison, often by e-mail, with the mainstream school's Examinations Officer and the pupil's subject teacher.

Staff roles and responsibilities

The role of the Subject Leader, Teachers and Teaching Assistants are fully described in the Curriculum Policy.

Involving parents

Parent(s)/Carer(s) of in-patient pupils are encouraged to become actively involved in the education of their child whilst they are in hospital by supporting them, at the bedside, with activities provided by the school or Play Therapists. Parents whose children are able but reluctant to join in classroom learning are encouraged to try problem solving puzzles on given websites or on paper resources provided by the teacher.
Parent(s)/Carer(s) of day pupils attend regular Health and Education Progress Review meetings and are invited to Parents' meetings to talk to subject teachers about their child's progress. These can be arranged between these meetings at an agreed time by parent and teacher.

Monitoring and Assessment – including Assessment for Learning (AfL)

Pupils are assessed through teacher observation, formal and informal discussions, pupil self-evaluation and the regular marking of work. Working with small numbers of pupils enables the use of assessment for learning continuously throughout the lessons.
There are summative assessment activities/tests at the end of each half term.
For a full account of The RFHCS policy see separate document "Assessment, Recording and Reporting".

Resources

ICT equipment and Web based resources: Maths genie, MyMaths, NRich, BBC Bitesize, MathsWatch, Geogebra and Boardworks, Edexcel text books.

For pupils in protective isolation, materials are regularly selected from newly developed materials, laminated and stored in plastic wallets.

Full maths equipment including scientific calculators is provided in clear coloured plastic cases.
Portable white boards, for writing, are also available for protective isolation use.

Date reviewed: **09/06/2024**
Date of next review: **June 2026**

Date approved by the Governing Body: 20/06/2024