Richard Lander School

Statement of Intent

Every subject maximises the potential of each student, enabling them to become successful learners, confident learners and responsible citizens. We will ensure that all students are well prepared for life and work and are keen to make a positive difference to the world they live in.

Statistics

Intent

Statistics encourages students to develop understanding of the basic concepts of statistical problem-solving and helps students to make more informed decisions. The Statistics curriculum aims to broaden students understanding of the world around them by increasing their ability to analyse, interpret and critically evaluate data. Real-world applications will be explored and the skills developed can have a huge benefit to a range of subjects across the curriculum, particularly in Maths, Science and the Social Sciences.

Skills

Students will develop skills in planning, collecting, processing, analysing and representing data. Students reason, interpret and discuss results and use data to calculate estimates of probability. They develop understanding of how technology enables us to collect, visualise and analyse large quantities of data to inform decision-making in public, commercial, charitable and academic sectors.
Students apply their knowledge and understanding to planning a statistical enquiry. They also learn to evaluate and interpret the outcomes of the enquiry, which involves thinking critically and choosing an appropriate way to communicate their conclusions.

Purpose of Study

The Statistics curriculum enables learners to:

- actively engage in the process of enquiry to develop as effective and independent learners, and as critical and reflective thinkers with enquiring minds.
- acquire an understanding of the basic concepts of statistical problem solving in a way that encourages confidence and enjoyment of the subject in everyday and real-life situations and out-of-classroom learning;
- develop knowledge, skills and understanding in statistical methods and concepts and in probability, including an awareness of the potential and limitations of data and methods;
- develop an understanding of the importance of statistical information to society as a whole as well as its limitations, including recognising misleading representations and uses of statistics.

Aims

Based on the principles of the statistical enquiry cycle, students gain a rounded understanding of how to interpret and apply data to a number of scenarios, both across subjects and in the real world.
Statistics is an area that has practical application for all our students to the world beyond education. We provide students with the necessary tools and conceptual foundations to analyse data, extract information intelligently from data given and be able to conclude and make decisions based on it. We focus on all students being able to critically assess the quality of analyses that others present to them to help in their decision-making process, becoming independent critical thinkers.

Rationale

Teachers provide bespoke lessons based on the individual needs within each class. Statistics involves asking questions about the world and finding answers to them in a scientific way, helping to understand a subject more deeply. This toolbox of skills acquired is intended to be transferable beyond the statistics classroom, the skills developed opening up opportunities to enhance other studies or career progression.

The course is structured around the statistical enquiry cycle, the process in which you carry out an investigation in the real world. This involves following five chronological stages, which we explore in the order that they occur.

Hypothesis and Planning: At the outset of the course, we equip pupils with the basic knowledge of key statistical terms. This allows us to imbed these terms by using them from that point in the course at all opportunities. We introduce the idea that all investigations start with an issue that needs addressing, which we formulate as a hypothesis. Pupils are made aware that this planning stage will need to encapsulate all future elements of the course.

Collecting data: We recognise the issues of bias and lack of representation and design a data collection method to minimise them. This involves learning methods of collecting primary and secondary data and practising the skills of selecting suitable methods.

Processing and Representing data: This involves taking the previously collected data and organising, cleaning, displaying and calculating summary statistics. They critically evaluate the needs of the audience when making these decisions and consider the use of technology to work efficiently.

Interpreting Results: Interpret all previous work in the context of the problem. Pupils apply their skills and knowledge to draw conclusions and make inferences and predictions.

Evaluating: Pupils consider any weaknesses in their methods to be able to refine the process for future investigations.

Each stage of the process builds on the previous stage, which enables the teacher to interweave the curriculum. Foundational knowledge of the previous stage needs to be secure in order to move on to the next stage of the cycle.

At strategic points within this cycle we test pupil's knowledge and their ability to apply this knowledge before we move on to the next stage. We follow the process of providing pupils a toolkit of methods for collecting and describing data (numerically and visually) before pupils can critically evaluate their strategy or a strategy given to them. Each stage we give first the knowledge, they then learn to apply that knowledge and then finally critically evaluate that approach.

Assessment

Formative assessment is used routinely in lessons. Both students and teachers are able to gauge understanding in real-time and adapt in order to continually improve. An emphasis is placed upon students articulating answers both accurately and fluently and frameworks allowing students to do this are an integral part of lessons.

Summative assessment in the form of unit tests, end of year exams and PPEs provide a comprehensive insight into student understanding and achievement. Teachers and students analyse their performance on specific questions, skills and subject areas. Feedback is used and teaching is adapted and refined to ensure students continue to improve their understanding.