**Mathematics Department**

**Spiritual, Moral, Social and Cultural Development**

The Mathematics Department at Alcester supports the development of SMSC in the education of its students not only through specific topics in the curriculum but also how we teach and how we conduct ourselves as professionals. The development of critical thinking skills enable students to analyse, evaluate and reflect upon their solutions - encouraging a positive mind-set is essential when learning to cope with new mathematical methods and/or difficult problems in order to develop perseverance in our students

Mathematics is important in everyday life and it is something we use all the time, often subconsciously: many jobs require being able to use and apply concepts and most subjects will use ideas encountered in Maths. As such it is difficult to identify every opportunity within the taught curriculum where SMSC is developed so below we have included some instances and not a definitive list.

Our aim is that opportunities for SMSC development are formally documented through the 5 year (all through years 7 to 11) scheme of work that is being developed and delivered on an ongoing basis as part of the new 2017 Mathematics GCSE. This involves identifying real-world and problem solving opportunities in addition to sourcing good quality resources that provide a variety of opportunities to vary the activity types when teaching a specific topic.



**Spiritual Development within Mathematics**

Developing a logical approach and the ability to recall and reason, along with questioning the way in which the world works promotes the spiritual growth of our students. In Maths lessons, pupils are always encouraged to delve deeper into their understanding of Mathematics and how it relates and can be used to explain the world around them.

We aim to be enthusiastic about the subject and to use a range of teaching strategies that allow pupils to be creative (i.e. tessellating shapes) or imaginative (i.e. designing exam questions) whilst offering opportunities for students to working through the “don’t get it” moments and experience the satisfaction of that “eureka” when an idea is understood.

Mathematics, as the Science of “Numbers” can be used to

* Explain naturally occurring patterns/sequences or symmetry such as is seen in a snowflake, or the seeds in a sunflower.
* Consider the concept of infinity (and beyond), the golden ratio and pi to convey the “beauty in the Maths”.

**Moral Development within Mathematics**

The moral development of pupils is evident in much of the curriculum where Maths is used in real life contexts and the students are able to apply the skills required to solve various problems and understand how decisions are made dependent upon the outcomes of the problem. Through these scenarios, students understand that certain choices may have different consequences and outcomes. We believe and hope to develop an awareness that Maths is not strictly limited to problems that result in right/wrong solutions.

An obvious topic for this theme will develop when looking at percentages, more specifically in comparing rates of interest on borrowing money where the role of “loan sharks” could be explored and discussed. Additionally, many “data handling” topics lend themselves to developing this theme further:

* The importance of understanding which “average” is used by different forms of media and why they may have made that choice?
* The use of misleading graphs and the interpretation of data to support or refute a claim.
* Stereotypical bias when teaching questionnaires and samples.

**Social Development within Mathematics**

Using and applying Maths involves being able to solve problems and being able to do this individually, as part of a team or pair when a task requires it, is fundamental. Students are encouraged to communicate mathematically when discussing, explaining and presenting ideas, through which they are able to develop their Mathematical reasoning skills.

Developing self-awareness and the ability to support other students allows effective use of self and peer reviewing to be used, which enables students to have an accurate understanding of their strengths and weaknesses. It is therefore essential that seating plans are used that support each other’s learning and teachers use their professional judgment ensuring the most effective classroom layout is used to support different activities.

We hope to enable our students to enjoy their success in Maths and will celebrate accordingly whilst supporting any short term failure through interventions as and when required. Social development is aided further by fostering a problem solving approach to any work set that encourages students to breaking tasks into smaller manageable parts, often with the assistance of other students.

**Cultural Development within Mathematics**

Mathematics is the universal language of the world and we aim to develop a realization that many topics we learn today have travelled across the world and are used internationally. Inevitably when introducing many topics, discussions will take place about their origins and the cultural influences that influenced the development of these topics i.e. Ancient Greece and the birth of geometry or tessellations in Rangoli patterns.

This cultural and historic importance is encouraged through:

* The use of bespoke topic homework that require students to research key historical figures in the development of Maths through the ages.
* Annual trips to the Science Museum (year 8)

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