Beaconside Primary and Nursery School

Science Curriculum Design Statement: Intent, Implementation, Impact.

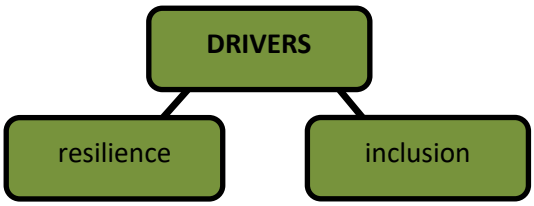
Intent

The breadth of our curriculum is designed with three goals in mind:

- to give pupils **appropriate experiences** to develop as confident, responsible citizens;
- to provide rich '**cultural capital**';
- to provide a coherent, structured, academic **curriculum** that leads to a sustained mastery for all and a greater depth of understanding for those who are capable.

Appropriate Experiences

We have developed two curriculum drivers, to complement our five learning values, that shape our curriculum, support the ethos and culture of our school, and to respond to the particular needs of our community.



Cultural Capital

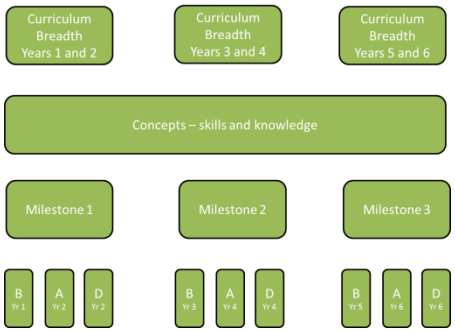
Cultural capital is the background knowledge of the world pupils need to infer meaning from what they learn. It includes vocabulary which, in turn, helps pupils to express themselves in a formal manner, where required.

Curriculum

Our coherently structured academic curriculum, underpinned by our learning values and drivers, sets out:

- a clear list of the breadth of topics that will be covered
- the 'threshold concepts' pupils should understand
- criteria for progression within the threshold concepts (milestones)
- criteria of depth of understanding (B,A,D)

Beaconside Science Curriculum Structure



The curriculum breadth for each year group ensures each teacher has clarity as to what to cover. As well as providing the key knowledge within subjects, it also provides for pupils' growing cultural capital. This is aligned with the National Curriculum programmes of study.

Threshold concepts are the key disciplinary aspects of each subject. They are chosen to build conceptual understanding within subjects and are repeated many times.

Milestones define the standards for the threshold concepts. These milestones are progressional and ensure pupils work towards meeting National Curriculum attainment targets.

Depth of understanding (B, A, D) ensures that in Years 1,3 and 5, pupils develop the basic (B) understanding of the relevant milestone as this is the knowledge building phase that provides the fundamental foundations for later application. Learning at this stage must not be rushed and will involve a high degree of repetition so that knowledge enters pupils' long-term memory. In Years 2, 4 and 6 pupils will have an advanced (A) or even a deep (D) understanding of their milestones.

Sustained Mastery – nothing is learned unless it rests in pupils' long term memories. This does not happen, and cannot be assessed, in the short term. Assessment, therefore, answers the following question: how well are pupils accessing and retaining curriculum content?

Implementation

Our curriculum design is based on evidence from cognitive science; three main principles underpin it:

- learning is most effective with spaced repetition
- interleaving helps pupils to discriminate between topics and aids long-term retention
- retrieval of previously learned content is frequent and regular, which increases both storage and retrieval strength.

In addition to the three principles, we also understand that learning can be invisible in the short-term and that sustained mastery takes time. The science curriculum promotes an 'advancing understanding' mindset rather than a 'coverage and evidence' mindset. We advocate making conscious connections between the science curriculum and other subjects so that more efficient use of time is made. In addition, continuous provision replaces the teaching of some aspects of the curriculum (where appropriate) and in other cases, provides retrieval practice for previously learned content.

Impact

The impact of our curriculum is that by the end of each milestone (2 year timeframe), the vast majority of our pupils have sustained mastery of the content, that is they remember it all and are fluent in applying it. Some pupils will have a greater depth of understanding. We monitor learning so that termly we can make a judgement whether or not the pupils are on track to meet expectations at the end of the milestone. This then influences planning and provision the following term.

By the end of each Key Stage, the large majority of pupils will be meeting National Curriculum attainment targets.