# GIFTED & TALENTED in COMPUTING at SHSSFC

**Pupils who are gifted in Computing are likely to:**

- **To demonstrate Computing capability significantly above that expected for their age**
  for example, key stage 3 pupils may be comfortable meeting the demands of the key stage 4 curriculum
- **To learn and apply new Computing skills quickly**
  for example, the ability to program using text based languages.
- **To understand complex Computing theories**
  For example, Binary conversions, understanding computer architecture, etc.
- **To apply Computing skills and techniques confidently in new contexts**
  for example, having learned about programming in a mathematical context, they recognise the potential of applying a similar to a science investigation.
- **To explore independently beyond the given breadth of a Computing topic**
  for example, they decide independently to validate information they have found from a website; having learned control procedures for a simple traffic light model, they extend their procedure to include control of a pedestrian crossing
- **To initiate ideas and solve problems, use Computing solutions effectively and creatively, develop systems that meet personal needs and interests**
  for example, they create an interactive fan club website that sends out a monthly newsletter to electronic subscribers (either working on their own, or collaboratively with peers)
- **To take advantage of extra-curricular activities and competitions that the department offer**
  Examples include: The Childnet Video Competition, UK Bebras Computational Thinking Contest, Barclays IT day trip, etc.

When identifying pupils who are gifted in Computing, it is important to remember that they may not be gifted in all aspects of the subject. For example, some pupils may be able to use high-level programming skills to solve control problems, but may not be as good at constructing and investigating databases.

It is important for teachers to have high expectations of pupils who are gifted in Computing and for classroom activities to provide opportunities for gifted pupils to develop and apply their particular capabilities. In order to break down some of the barriers that may constrain very able pupils, teachers should try to provide teaching and learning experiences that encourage all pupils to think creatively, explore and develop ideas, and try different approaches. All pupils should be encouraged to set their own questions, offer ideas, suggest solutions or explanations, and reflect on what they have heard, seen or done in order to clarify their thoughts.

Teachers should:

- use a variety of challenging questioning strategies to encourage pupils to draw on previous experiences and to apply their thinking to new situations
- set extension tasks that avoid repetition -- extension work should encourage pupils to pursue a greater depth of understanding of the subject or to apply their Computing skills in new contexts, including other subjects
- encourage pupils to use a wide range of source materials, including more complex data sets
- encourage pupils to combine evidence and/or information from a variety of sources, and to exchange and share their knowledge with a variety of audiences and for a variety of purposes
- challenge pupils about their approach to a task, in order to encourage them to justify their choices and try out alternative approaches
- provide a more complex problem as a stimulus for developing Computing systems, for example, a control problem with an increased number of inputs and variables
- encourage pupils to discuss the suitability of different approaches, the tools to be used, and the range of possible outcomes
- encourage pupils, as they are developing their Computing systems, to look for opportunities to develop greater efficiency, including automation of processes, and to consider where levels of integration can be increased. For example, pupils could be encouraged to write macros or to create mail merges that extract information from a database for integration with a word-processed document
- encourage pupils to refine their product by reviewing and evaluating the process undertaken, the Computing tools used, and the effectiveness of the end product in meeting the specified needs of the task
- discuss with pupils what they are learning, and encourage them to identify their own learning needs
- provide opportunities for gifted pupils to learn new Computing skills together and/or with older pupils, in order to accelerate their learning and give them an opportunity to challenge each other
- ensure that staff have the Computing expertise to challenge the most able pupils effectively
- review provision in terms of software and peripherals, to ensure that the most appropriate resources are available
- maintain a portfolio of outstanding work for teachers and pupils to look through

- use the internet and a school or local intranet to enable similarly gifted and interested pupils to collaborate on projects.
- encourage pupils to attend extra-curricular activities, trips and competitions

Pupils who are gifted in Computing need to be given opportunities to develop breadth and depth in their knowledge, skills and understanding. Teachers need to find a balance between drawing on work from later key stages and planning further differentiation by extending the breadth of study.

It may be appropriate to extend the range of technologies and software available. For example, teachers can give pupils access to different hardware devices (e.g. Raspberry Pi) that provide both greater knowledge and understanding of physical programming.

It is also important to provide sufficient open-ended tasks to challenge all pupils, particularly those who are gifted in Computing. For example, you could challenge pupils to choose appropriate software or programming language to solve a problem and then ask them to justify their selection.

## Monitoring and Evaluation in Computing

### How successful is your policy for gifted pupils?

Do you have ways to identify gifted pupils from an early stage?

What measures are in place to ensure that all sectors of the school community are able to reach the highest levels of achievement?

Do you have a broad, balanced curriculum for gifted individuals, as well as for the group as a whole? For example:

- have they experienced a range of different aspects of Computing, such as researching and presenting information, experimenting to find things out and to develop their ideas?
- are they able to use a sufficiently wide range of equipment and resources?
- do they have opportunities to analyse the approaches used by more advanced Computing users?

How do you challenge gifted individuals to develop their skills, knowledge and understanding? What opportunities do you give them to apply their skills, knowledge and understanding in a variety of contexts? For example, do individuals make the learning gains expected of them? Are teachers' expectations appropriately high?

Can gifted pupils critically evaluate their own work, identify their strengths and weaknesses, and improve their own learning?

Do parents understand and know how best to support the work that their children are doing in, and with, Computing -- at home and at school?

How do parents, colleagues and pupils respond to the work of individuals and the whole group? Is work valued appropriately?

Are there opportunities for displaying work, for holding exhibitions, and for involving individuals and groups in the process?

Do you maintain records of the achievements of the most able pupils year on year?

Are you aware of the performance of gifted individuals in other areas of the curriculum?

What happens to pupils when they move on in the school? To other schools? Beyond school?

How can provision be further developed, clarified or improved?