Criteria Plan: A1

There is a named member of staff responsible for the leadership of the subject. They have participated in subject specific training in the last three years and have shared this with all colleagues in the school and can demonstrate the impact this has had.

Reflection on the impact

Handover of duties from the previous science co-ordinator was completed in January 2015 and I am now sole science co-ordinator for the school during her maternity leave. I was given excellent training in how to carry out the role and left with many events and practices already well established and in place.

To support my role, I have attended a number of CPD courses, including the PSQM training and used the skills gained to present back to my colleagues through staff meetings and weekly planning meetings.

I have gained in confidence throughout the year, following positive feedback from other teachers within the school and now feel able to offer constructive advice and criticism to my colleagues in helping them to deliver an exciting and varied science curriculum. From feedback gained from colleagues across the upper school I have given them more confidence to deliver detailed and engaging science lessons and supported their personal CPD through sharing my knowledge and experiences. Moving forwards, I would like to have a similar impact in the lower school, which will be more difficult to achieve as I do not hold weekly meetings with those members of staff. However, I have begun to adapt some of the lesson plans for lower school already and know that I have good support from members of staff there who will be committed to bringing in new ideas.

Criteria Plan: A2

A staff team has been involved in developing the school's principles for teaching and learning science. They are reviewed regularly along with the scheme of work for science which promotes these principles.

Reflection on the impact

There are established principles of science teaching within the school and these were reviewed and updated in spring 2015 in consultation with the whole staff. I use these principles when planning science across the school and regularly refer to them in staff and planning meetings. I feel that teachers across the school could use them more in their own planning and am intending to produce laminated versions for every teacher next year as a visual reminder and cue.
As can be seen from photos in the portfolio, teachers across the school are committed to delivering a range of exciting and engaging lessons for all children. From the children’s responses, it is clear that they enjoy the range of teaching and learning styles employed and benefit from the wide variety of approaches used. Through ongoing CPD I hope to increase the confidence of teachers further and provide them with the skills and confidence to deliver an even broader range of lessons – I will particularly focus on practical (but simple) classroom experiments that can be used to demonstrate key concepts and principles.

**Criteria Plan: A3**

The science subject leader has worked with the Senior Management Team to agree School Development Targets for science based on identified strengths and weaknesses. The science subject leader had led staff in the implementation of actions to meet these targets across the school.

**Reflection on the impact**

The School development plan contains a detailed section regarding the teaching and implementation of the science curriculum and the action plan is produced in close consultation between the subject leader and the SLT. Actions are monitored throughout the year via performance management meetings and reviewed at the end of each year. The targets set are SMART and reflect the real needs of the school and its children. The current action has plan has had to be adjusted slightly due to budget constraints for the next financial year, but all alterations are made in consultation with the subject leader and are designed to have minimal impact on the quality of the teaching provided.

**Criteria Plan: A4**

There is a shared understanding of the importance of science, clearly evidenced throughout the school, including the grounds.

**Reflection on the impact**

I believe that there is evidence throughout the school that shows that science is valued and enjoyed by the children. There are science displays in the majority of classrooms, showcasing children’s work, exciting research and thought-provoking questions.

Key school events such as Science week were well publicised through flyers, emails, blog posts and newsletters. During and after the event, blog posts and updates were used to keep children and parents informed, together with a display board in the main reception showing parents and visitors what exciting events were taking place on each of the days. A celebration assembly was also held to mark the end of the week, where children were able
to showcase their work and explain what areas they had found particularly inspiring and exciting.

I have endeavoured to showcase a variety of science work throughout the year from my own class via the school blog and am aiming to increase this to cover other classes within the school next year. I believe that all teachers share my understanding of the importance of science teaching and ensure that science is given a high priority within their weekly planning. From children’s feedback, it is also clear that they share this view on the importance of their science learning, and also its relevance to the real world and their everyday lives.

**Criteria Plan: A5**

Peer assessment and team teaching of science takes place across the school. School-wide work book scrutiny takes place.

**Reflection on the impact**

During handover from the previous subject leader, I studied the school science curriculum in detail and familiarised myself with the progression of teaching and skills across the years. I also integrated a number of new curriculum objectives and ensured that the current provision was up to date and in line with core objectives. During planning meetings, I have discussed the teaching of science across the school with nearly all staff and sought their feedback and thoughts through staff meetings and informal discussions. I have held pupil voice sessions where I have question children on many aspects of their science learning, which has in turn improved my knowledge of the teaching and learning styles being employed across the school. I have conducted a book scrutiny and work sampling, though I feel that I need to increase this next year, as well as having a more formal approach to feeding back my findings to other staff so that they can learn and benefit more from the process. During science week, I had the opportunity to observe science teaching in every class within the school and offer advice and feedback to the staff. I also had the opportunity to team teach classes with a number of different members of staff.

**Criteria Plan: B1**

Internal monitoring and performance management processes are used to inform decisions regarding staff CPD needs in science.

The subject leader has delivered CPD to some other teachers

**Reflection on the impact**
During weekly planning meetings, I present the week’s science lesson to upper-school staff. I use this opportunity to provide as much staff CPD as possible – explaining difficult concepts, highlighting areas that could be used to extend higher ability learners and seeking to fill gaps in teacher’s subject knowledge. I also endeavour to make lessons straightforward to understand and teach, even for those with little detailed subject knowledge.

During staff meetings, I have shared some of the examples of best practise that I have encountered during my own CPD. I have also arranged for a number of guest speakers to address both staff and children, which judging by teachers’ comments and feedback, has proved successful in increasing their own knowledge and confidence. Through staff meetings, I have ensured that staff have the opportunity to request CPD courses that they feel would prove necessary and ensured that these courses have been available during INSET days. Overall I have been pleased with increase in confidence shown by the teaching staff, but feel that I need to utilise the opportunities of team-teaching more next year to fully utilise the skills already available within the school.

Criteria Plan: B2

There are several relevant teaching and learning approaches in science being adopted by teachers across the school in response to school development targets. The science subject leader is pro-active in introducing new strategies.

Reflection on the impact

Through feedback from children and photos in the portfolio, it is clear that there is a wide range of teaching and learning approaches within the school. From our science principles, we try to maintain a practical-focussed approach, allowing children to try and carry out a range of experiments and procedures themselves. Where this is not possible, for safety or financial reasons, teachers are confident to carry out practical experiments themselves as demonstrations and I have provided support and given advice to several members of staff this year in how to carry out such demonstrations. ICT is widely used a learning tool across the school, from videos and flipcharts used on the interactive whiteboard, to laptop and netbook use within the classroom for research purposes. I have really encouraged the use of speech/language and drama skills to enhance our science learning this year and have had very positive feedback from upper school teachers. I aim to try to integrate more of these techniques into lower school next year. We have also focussed on giving the children freedom to decide how and what they investigate, with creative and open-ended homework’s and classroom tasks. Teachers all feel free to change and adapt lessons as they see it, to suit the abilities and learning styles of their own classes.

Criteria Plan: B3

Science resources are used across the school and are well maintained and organised. They are audited regularly and school has identified suitable further resources to purchase that
will enhance teaching opportunities. Use of ‘free’ resources, such as rock samples, fabric collections and plants has been developed.

Reflection on the impact

I undertake an audit of science resources prior to each term’s topic and order any equipment required. I have also asked teachers during staff meetings, and on an ad-hoc basis, about their requirements and any additional resources that they feel would be beneficial to their teaching. Staff also feel able to order equipment and resources themselves. As far as possible I have utilised ‘free’ resources around the school and re-used and recycled when appropriate. Due to budget constraints, spending on resources for next year will have to be reduced and therefore I have adjusted several lessons accordingly to substitute cheaper equipment without reducing the quality of the lessons.

A wide range of resources are used across the school for science teaching, as can be seen from the photographs of children working. Additional resources not available within school have been used by the children during science week, when a huge selection of flight related equipment was brought in. Additionally, children have had the opportunity to work with exciting resources during assemblies and workshops throughout the year such as the robot explorers, badminton school assemblies and a range of after-school clubs.

ICT is widely used across the school for the delivery of science lessons. Laptops and netbooks are used regularly within the upper school for research, writing up, watching interactive videos and playing science-themed games. Lower school have had access to desktop computers, although this has proved more challenging this year due to the demolition of the ICT suite. With the completion of the new suite in September I hope that more ICT themed lessons can then take place.

Criteria Plan: C1

Children’s curiosity is encouraged and valued. They ask questions and encounter challenging problems, and independently come up with ways to investigate them using their growing scientific skills. Differentiated activities of appropriate challenge are provided for all pupils offering extension and open-ended work for the most able, and support/guidance for the least. Children are given the opportunity to reflect on their work. They are encouraged to engage in relevant and motivating science at home. Pupil are encouraged to participate in school-based science initiatives.

Reflection on the impact

This year, I have really tried to focus on tailoring the science lessons towards what the children want to learn. We have held pupil voice seasons in advance of our topic planning
meetings and then structured the delivery of science and topic lessons to answer their key questions – this has been recognised and appreciated by the children as seen through their responses in the portfolio. In lessons children learn using a variety of investigative strategies, planning their own practical’s and experiments and learning from the mistakes. I have attempted to keep lessons as hands-on a possible and where possible, give a real-world context to the children’s learning by linking science lessons to real world events and practical examples. We have set a number of science homework’s across the school, where children have had the freedom to research and produce work in a variety of styles and mediums. We have set practical, construction based homework’s, that really showcased the children’s creative skills and gave them to opportunity to explore and investigate particular areas of science that interested them. These proved extremely successful (judging by the quality and complexity of the work produced, and the pupil feedback) and I am definitely looking to increase the number of these homework’s set next year. I have also focussed on stretching our higher ability children by including work and examples from the secondary syllabus and also more open-ended investigations. I feel this is an area that I need to improve on further next year, as the overall standard of science knowledge demonstrated by our children is extremely high. I aim to introduce extra challenges for G & T children and have allocated time within next year’s action plan to do this.

Criteria Plan: C2

Teachers across the school build different assessment strategies in their science lessons and outcomes of these into their planning. The science subject leader is pro-active in introducing new strategies.

Teachers are aware of the expected levels of attainment for the pupils in their class and are able to make summative assessments confidently.

Reflection on the impact

Science assessment is well understood throughout the school and all teachers use an ongoing assessment approach to track the progress of their classes. Practical assessment task are carried out each term and I have produced a number of knowledge assessment tests that have been used across the school. Teachers report assessment to levels to me on a termly basis. Following a staff meeting held by Sarah, I have begun to incorporate further AFL assessment task into upper school lessons, such as before and after snapshots, questionnaires and drawing tasks. Several classes within the lower school have also adopted this approach, though I aim to increase the use of these approaches next year. We have recently introduced a new computer-based assessment tool called Target Tracker that gives teachers the opportunity to assess their class throughout the year against a number of key objectives. I have held a staff meeting on its use to help teachers gain confidence in using it and we will be using it to assess on trial basis this year, with a view to fully assessing next year. Staff feel confident to discuss and ask for advice relating to assessment from the subject leader.
Criteria Plan: C3

A high percentage of children across the school make positive and enthusiastic comments about science activities in school.

Children's opinions are valued and responded to.

Reflection on the impact

From pupil feedback, parental comments and the standard and quality of work showcased in the portfolio, it is clear that children enjoy their science experiences in school. I have found the pupil feedback particularly enlightening, as it shows how much the children enjoy having input into the topics and methods they use to learn science. Children have had the opportunity to ask key questions, investigate their own topics and undertake creative homework and have in turn produced excellent work showing an extremely high level of understanding. When questioned, children are enthusiastic about science lessons and are also able to explain the relevance to the real world. Feedback has shown that children really enjoyed science week, with several of them stating it was a highlight of the entire year. The parental feedback regarding science week also showed how much the children enjoyed the experience and the opportunity to work with different children across the school. Learning has been ongoing from the week as well, with many children demonstrating their understanding of flight principles to trim and adjust paper planes at break times. Learning experiences out of the classroom have also been enjoyed by the children, with experiences such as the Explorerdome, robot explorers and Badminton school demonstrations also ranking highly in children’s yearly highlights.

Criteria Plan: D1

Through their planning, teachers have successfully identified appropriate links with other subject areas. Pupil work demonstrates the use of science as a context for work in core curriculum areas.

Reflection on the impact

The whole school teaching team contributes to making science part of the wider curriculum. Opportunities for cross curricular writing in literacy are explored, with children writing explanation and instruction texts linked to their science topics. The link between science and PSHE is also made clear, with an emphasis on the need for a healthy diet and lifestyle and the link between exercise and health. The science of reproduction is also explored and linked to children’s RSE lessons. Links with maths are regularly made through the use of tables and graph construction, along with the use of averages and sampling methods. Moving forwards, I feel it is extremely important to promote these cross curricular links, and with the opening of the new ICT suite, I feel that the link between science and ICT needs to be promoted further, with the use of new software and investigative approaches.
Criteria Plan: D2

A programme of regular visits/visitors, outreach experiences and workshop activities are being developed for all classes to enhance specific science units/themes. Field work is carried out in the local area and sometimes, beyond it. Contact by pupils and teachers is made to other schools/community to enrich scientific understanding.

Reflection on the impact

Throughout the year, there have been many outside agencies who have contributed to the science teaching and learning within the school. During science week, a number of the activities were run by an educational charity while funding and training was provided by Rolls Royce. Several guest speakers were provided by local businesses with the speakers from the Concorde preservation charity and Rolls Royce proving particularly inspirational to the children. A school have visited to provide an extremely exciting workshop assembly using liquid nitrogen. This also gave the children an opportunity to speak with several current year 9 students about their science learning. I also arranged for a visit from the Explorerdome (planetarium) that proved extremely popular with children.

During science week, I arranged for three teachers from a neighbouring school to visit and work with the children, sharing their skills and best practice. I hope that next year, I and some of the teaching staff from our school will be able to return the favour, which will give us the opportunity to take away new skills and ideas. I also hope to make a link with a local Free School (our largest feeder school) to familiarise myself with science teaching at year seven and hopefully apply some of the higher level skills to challenge our higher ability students. This link should also help me to tailor our investigative process to ensure that children move on secondary school with the appropriate skills.

Criteria Plan: E

Reflection on the impact

1) DfE number:
2) a primary academy.
3) We have three classes per year group.
4) There are four year groups, from year three to year six.
5) We do not have a nursery attached.
6) We do not have a children’s centre attached.
7) The catchment area is a leafy and wealthy suburb of W—the intake is predominantly children from well-off, middle class families.
8) There have been no special circumstances over the past three years, however we recently underwent an OFSTED inspection and were rated as outstanding in all categories.
9) Science teaching is well-established at E, however a particular highlight this year was science week, which saw the entire school focussing on flight-related lessons and workshops. The buzz amongst the students was incredible and many of them still talk about it as one of their favourite memories of E.
10) I feel that many of the procedures and processes covered by the PSQM were already in place and well established, however as a new subject leader, I found the process beneficial in developing my own skills and knowledge of science teaching and learning within the school.