St. Joseph's Catholic High School

Living, Loving and Learning through Christ

Curriculum Intent

Department: **Science**

We aim to deliver the Mission Statement of the school by:

- How does your curriculum intent support the mission statement of the school?
- The Science department enhance students' lives in the study of Biology, Chemistry and Physics by fulfilling the St Joseph's Mission statement, **Living, loving, learning through Christ.** In science we study a huge range of topics which are applied to everyday life sparking interest and a love for science in our students. We develop **active** learners and critical thinkers, expanding the **curiosity** of our students whilst covering the National curriculum. We follow a 5-year curriculum in science which builds and develops knowledge and skills from KS2 through KS3 and onto KS4 whilst preparing our students for life beyond school. We encourage our students to think about the role of science in society and enable them to develop confidence, knowledge and skills they can transfer to other areas of their lives within and beyond school. **Our curriculum contributes to many of the Keystones and is designed to developed skills for future learning.**
- Our curriculum reinforces the JPP throughout our schemes of work. We have a focus in science on developing **curious** and **active** learners who are resilient. We provide opportunities for class discussion around highly debated topics where students are taught to show **compassion** towards each other and each other's point of view. We help develop a **love** for problem solving and inspire future scientists, engineers and leaders. Our students take part in STEM activities and we make links with local companies to link their subject knowledge to professions and projects in the community. **Developing further our Catholic Life #Loving Developing our Careers and vocational Life #Living**

- How does it reinforce the formation of our students and staff (JPP)?
- Knowledge about the transferability of science: understanding the broad application of science qualifications, knowledge and skills used in science (e.g., that these can lead to a wide range of jobs beyond, not just in science fields). This is expanded through our STEM projects in which we complete set challenges from the Royal Academy of Engineering to develop the use of science to solve everyday problems. **Developing our Academic Life #Learning Developing our Careers and vocational Life #Living**

- How does you curriculum provide knowledge and cultural capital to ensure lifelong learning?
- The intent of the science curriculum is to contribute towards the culture capital, not only in knowledge, but in the skills developed in our students to allow them to be successful leaners and in wider life. The knowledge we provide our students with is powerful and will put our students at an advantage, for example;
  - Scientific literacy, students' knowledge and understanding about science and how science works. This also includes their confidence in feeling that they know about science. We provide our students with a range of materials to read, write and discuss enabling our students to show what they know, enquire and question what they don't, and expand on their knowledge. **Developing our Academic Life #Learning Developing our Culture and Reading #Listening**
  - Science-related attitudes, values and dispositions: this refers to the extent to which our students see science as relevant to everyday life (for instance, the view that science is 'everywhere'). We making continuous links in lessons to the uses of science in everyday life and encourage **curiosity** around the uses of science.
  - Scientific vocabulary, the ability of our students to **eloquently** use the correct scientific terminology and correct each other and members of society on the incorrect use of science terms. We set written tasks which challenge our students to write to companies and explain to them why their use of certain terminology is

incorrect (for example "weight watchers"). In each lesson we provide students with key scientific terminology which are used in both answering and asking questions. **Developing our Academic Life #Learning Developing our Culture and Reading #Listening**

- Participation in out-of-school science learning contexts: we participate in informal science learning contexts, such as science events, competitions, museum shows and visits to industry. **Developing our Careers and vocational Life #Living Developing our Culture and Reading #Listening**
- Family science skills, knowledge and qualifications: we discuss students' family and if they have science-related skills, qualifications, jobs and interests. **Developing our Careers and vocational Life #Living**
- Talking about science in everyday life: we encourage and challenge our students to talk about science out of school with key people in their lives (e.g., friends, siblings, parents, neighbours, community members) and the extent to which a young person is encouraged to continue with science by key people in their lives is an important factor in their ongoing interest and commitment to the subject. **Developing our Careers and vocational Life #Living**

- How is your curriculum demanding and ambitious in content, breadth, and depth?
- In order to provide a broad and balanced curriculum, our KS3 curriculum aims to expose students to a range of scientific discoveries and theories from different cultures and different time periods. The curriculum will enable students to have a wider understanding of what we mean by culture, identity and diversity and how people may have faced persecution because of who they are or what they believe in. Each unit of work is tailored to meet the Science assessment objectives and continually helping them to develop and elaborate their responses to texts both verbally and in written responses. **Developing our Culture and Reading #Listening**
- The Science curriculum is planned and sequenced to build on prior learning at KS2 and develop working scientifically skills. We are aware our KS2 students come to us with a variety of science experience and to ensure all students are familiar with the key scientific skills we invite all our KS2 students for a feeder day in science to embed and develop their skills. Our curriculum is a 5-year curriculum which follows a continuous thread of knowledge, application and extension. The sequence of learning allows us to revisit key concepts and skills and to continually develop these further. KS3 and KS4 students have a 'Sequence of learning' flowchart in their exercise books to refer to throughout the year and help them to identify and understand the next steps in their learning. **Developing our Academic Life #Learning**

- How is your curriculum planned and sequenced to ensure the aims and objectives of the SIP's are achieved?
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- How have you modified your curriculum in the light of lockdowns and missed learning due to C19? What adjustments have you made for different abilities?
- We have adapted our plans for the KS3 curriculum to be taught over 3 years instead of 2 to ensure that our students have caught up with any work they have missed at KS2 due to the lockdown. This allows us to provide a greater coverage of the KS3 curriculum and key concepts and to fill in any gaps in knowledge. A secure

foundation is important before we build and develop these ideas through KS4. All assessments include an extended writing task to allow students to develop writing skills and we have areas throughout our SOW to fully embed reading, writing, and speaking skills. At KS4, curriculum maps have been edited to make allowances for the GCSE exam changes and setting has been strategic to ensure students are targeted according to their needs and their abilities. Year 10 and 11 both have an additional period of science each week and this is used to ensure missed learning is covered and to allow consolidation of prior learning. Some Year 11 PP students are offered additional tutoring through the 'My Tutor' initiative. We provide all students with the opportunity and support to Extend their knowledge in each lesson and this prepares our students for KS5 and life beyond school. **Developing our Academic Life #Learning Developing our Culture and Reading #Listening**

- How do you ensure that your curriculum builds upon prior learning (KS2) and supports future learning (KS5)?
- The Science curriculum is planned and sequenced to build on prior learning at KS2 and develop working scientifically skills. We are aware our KS2 students come to us with a variety of science experience and to ensure all students are familiar with the key scientific skills we invite all our KS2 students for a feeder day in science to embed and develop their skills. Students from our primary schools now come to school for Science lessons based on their KS2 work. **Developing our Academic Life #Learning**
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- Do you know how your subject is taught at KS2?
- Close links with all primary schools has allowed us to review what is being taught and support our primary schools accordingly

To achieve our Mission Statement, our curriculum:

- How is your curriculum structured to support young people who are compassionate, loving, ambitious and strive for excellence in all that they say and do?
- The Science curriculum is structured to ensure that students are compassionate, loving, ambitious and strive for excellence. Through the attitudes and behaviour of the staff in the Science department, we help teach students the Catholic values which are central to the mission statement. Students enjoy attending their Science lessons and there is a mutual respect between staff and students. The climate for learning in science is excellent and the compassion shown to students by our staff helps nurture them to reach their full potential. We endeavour to instil curiosity and a love of Science in all our students, and this is evident with the large number of students who go on to study Science at KS5. **Developing further our Catholic Life #Loving**

- What opportunities have been planned into the curriculum to promote and develop literacy, reading and oracy skills?
- All SOW have built in opportunities for Oracy. This can be seen in lessons during discussions and debates. Students are provided with lots of opportunities to read scientific texts to discover information and support their own investigations and ideas. Our curriculum is designed to encourage reading to learn more about historic scientists and their discoveries. Students also read scientific methods regularly prior to carrying out practical work. Writing skills are important in the Science curriculum for all year groups. We have high

expectations for the quality of written work produced, in particular writing scientific methods and evaluations. We have incorporated IPEEL writing task in to our SOW to allow students to think about the writing process and to develop structured answers. All students also complete one piece of written work that is formally assessed using the 'St Joseph's Writing Standards'. **Developing our Academic Life #Learning Developing our Culture and Reading #Listening**

- How do you ensure that all SEND and disadvantaged students are properly supported and challenged?
- Our curriculum is differentiated to ensure all students, regardless of starting points or learning needs make good progress. We work closely with the SENDCo and learning support department to ensure the needs of all our students are met. All SEN students have support plans which are individualised and accessible by all staff through class charts, all staff members also have an up-to-date copy of the SEN register. Lessons are differentiated to meet the needs of our students and all students in science are challenged. We expect all students to be able to Know and apply the knowledge gained in the lesson, we then provide all students with the opportunity to extend and provide a range of scaffolding to help students to do this, this can be sentence starters, word banks and differentiated worksheets. Our PP students are prioritized in both targeted questioning and marking. All PP students can be quickly identified using class charts and the PP policy and strategy is followed by all staff in the department. Staff make regular contact with PP parent/carer, all KS4 PP students are provided with a revision guides and electronic devices. As mentioned previously many of our year 11 PP students are also provided with additional tuition through the "my tutor" scheme. The quality of teaching in the science department is good which ensures all PP students are supported and challenged within our classrooms. **Developing our Academic Life #Learning**

- What expertise/CPD do you have within your department to ensure that all teachers have good subject knowledge?
- We have 5 specialist teachers in our department, two who are examiners for AQA. We also have two non-specialists. To support our non-specialist teachers, we provide mentoring sessions with a specialist within the department. We work collaboratively as a department to help develop curriculum plans, lessons and assessments, tapping into the expertise in the department. We have ongoing CPD for all members of the department, including STEM conferences and CPD sessions provided through SLP and AQA. Further CPD is carried out in department meetings with sharing of resources, standardising and moderation of work and involvement in the whole school CPD initiatives. Regular learning walks and observations allow us to assess and improve the standard of teaching within the department, this is a continuous developmental process. We also work collaboratively with colleagues across the county via the Science Subject Leader Network meetings. **Developing our Academic Life #Learning**

- How do you promote meta-cognitive strategies that help students to know, understand and apply more?
- Our department uses various Meta-cognitive strategies to help students know, apply and extend more. Students have built in opportunities for reflection on their learning, this is often linked to RYG lessons. At KS3 and KS4, dialogic teaching is common practice in the Science department allowing students to question and reflect on learning. Whenever we teach writing skills, staff model the writing process, explaining each step and verbalising our writing decisions as we go along and questioning students to allow them to verbalise their thoughts. **Developing our Academic Life #Learning Developing our Culture and Reading #Listening**

- How does your subject review learning to challenge misconceptions and interleave prior work?

- How do you use timely and effective assessment to check starting points, knowledge, skills and understanding?

- Students have lots of opportunities to review learning to challenge misconceptions and interleave prior work, this is embedded within the curriculum over the 5 years. The use of quizzes and Seneca HW tasks, allows students the opportunity to reflect on prior learning. Starter tasks recap previous learning and assess the ability of our students to recall previous learning. Small formative assessments are completed after each topic and these allow students to assess their prior learning and identify gaps in their knowledge, model answers are then provided to support understanding. We then use summative assessments at the end of units to demonstrate their learning, knowledge and skills. These assessments also assess reading and writing skills. **Developing our Academic Life #Learning**