St. Joseph's Catholic High School

Living, Loving and Learning through Christ

Curriculum Intent

Department: Engineering

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

- How does your curriculum intent support the mission statement of the school?

- How does it reinforce the formation of our students and staff (JPP)?

- How does you curriculum provide knowledge and cultural capital to ensure lifelong learning?

  The engineering curriculum is designed to expose students to thinking about problems that affect their community and the greater world by starting at age 11 to encourage students to believe they can make a difference with their knowledge and skills students tend to feel that their project is more important and significant than a grade it also starts to reaffirm our family and community message that we stand for as a school. In year 8 students are encouraged to aspire by exposing them to national competition giving them more freedom in design and gaining their first CREST award. We introduce students to virtual tours around museums in other areas including London and make them aware of which museums are free. We show interviews with different designers from around the world to show students about how different cultures and countries have inspired design. In year 9 we expose students to working with a real client we have built up a strong relationship with West Cumbria Rivers Trust and they enjoy giving our students their time and effort to support them in being exposed to country life issues and how we can engineer solutions. Students also go out into the field and build their engineering products to real scale. Giving them the memories, skills and knowledge they need to learn for adult life.
  In KS4 we focus more on local culture and what our community needs. We have several local professionals that come in and engage and talk to our students about what is required and what the work culture is like locally and what is expected of them.

- How is your curriculum demanding and ambitious in content, breadth, and depth?
  Our curriculum is designed so that students minds can be stretched and learn independent learning skills. Students are provided with a variety of text books on each desk to enable them to find answers for themselves. Our curriculum is ambitious our students work is not only marked by their teacher but for several projects their work is judged and exposed to international designers, CEOs of companies, the local workforce and the experts working for the British science association. Students are aware of this and know the harder they push themselves the better the reward they will gain. The curriculum is varied and we try to provide students design briefs that effect different areas of life both near and far.

- How is your curriculum planned and sequenced to ensure the aims and objectives of the SIP's are achieved?

- 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?
  Since COVID we have completely changed the curriculum due staff changes. The adjustments in class made for different abilities include: Sentence structure support on the board for students who struggle with writing. Additional support for students though our faculty support staff offering more one to one support for students.

- How do you ensure that your curriculum builds upon prior learning (KS2) and supports future learning (KS5)?
  Due to the nature of the subject we find that students have had a varied experience of design and technology. This includes very minimal practical work. All our projects will initially introduce KS2 concepts that should have been delivered during KS2 to ensure any knowledge gaps are covered. Students from year 7 are introduced to the style of language expected in the workshop and an engineering classroom. (For example We do not have activities or tasks we have design briefs.) Extended writing is done in length at KS4 to ensure they understand the more text heavy questions which are more weighted and we encourage a healthy dialogue and talk to each other as equals during debates to ensure when they go onto KS5 they are eloquent students.
- Do you know how your subject is taught at KS2?

I am aware of what the national curriculum dictates for KS2 however delivery is very unbalanced.

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?

- What opportunities have been planned into the curriculum to promote and develop literacy, reading and oracy skills?
  In KS3 a big write and an oral presentation are required from every student each year. We have flash cards on each desk so that students can enhance their written work if they feel they have completed. Reading is encouraged with our STEM library and magazine stand which is full of professional magazines.
- How do you ensure that all SEND and disadvantaged students are properly supported and challenged?
  Students are highlighted early in the academic year to determine where they need additional support. If required we try to cater to the individual for example, EAL prompts for students to keep in their folders for reference. Key words in booklets translated for the student. If literacy is an issue extra help is given with sentence structure. Flash cards are on each table to help also. If more help required then where possible additional support within the faculty is placed in the classroom.
- What expertise/CPD do you have within your department to ensure that all teachers have good subject knowledge?
  All teachers in the department must have design and technology accreditation in addition to teaching. We call in retired experts regularly to discuss projects and to give mentoring support. We are currently building up a new relationship with the head lecturer of engineering at lakes college to engage and support learning in preparation for KS5. We are also leading the enthuse partnership across Allerdale to support and receive additional funding for STEM CPD.
- How do you promote meta-cognitive strategies that help students to know, understand and apply more?
  At the end of the lesson we do verbal knowledge recall of the lesson. Several lessons throughout the term are started with knowledge retrieval questions within their booklets. Students are taught to plan their projects out thoroughly from year 7 and this includes their time management skills also.
- How does your subject review learning to challenge misconceptions and interleave prior work?
  (I am female teaching engineering first misconception ticked!) Misconceptions about engineering are common due to the local culture we live in. We challenge these within our projects and answer questions or correct statements candidly but pleasantly this can lead us off into debate but it is healthy debate. We increase our external contacts and get more employers in to aid us in addressing misconceptions. Every project introduces new skills and knowledge the projects build up on each other so that students will need to use the previous skills or knowledge learned to apply the new skills or knowledge. For example in year 7

students are taught the basics of soldering a simple circuit year 8 we retrieve that knowledge and add more skills by wiring and soldering a lamp.
How do you use timely and effective assessment to check starting points, knowledge, skills and understanding?

Being a practical subject knowledge checks are carried out several times throughout the year. When it comes to assessing practical skills though this is an ongoing observation due to health and safety and ensuring the students work through quality checking.