

## October Diary Entry

The end of July preparations for the new Academic year came very quickly. When we found out we were finalists for the RRSP, our team were extremely excited and couldn't wait to begin in the new Academic year. All involved are keen enthusiasts who want to offer our students the best we can, at the same time looking forward to the learning journey we will all embark on.

Our journey thus far was offering Robotics as an after school club. Due to its popularity with the students we quickly identified that this hands on approach engaged all learners with different abilities. Whilst learning ourselves, we were able to support the students and also provide the more able the opportunity to challenge themselves with their builds and/or the programming. Every week without fail we would have an email or a student come up to us and ask if they could join the club.

### ***The Planning stage:***

As we embark on the new academic year Mikyla Warr and myself began thinking about how we would be able to implement Robotics into the curriculum at KS3 and KS4 in order to give all students the opportunity to access the robots in an engaging way. Questions we considered included: ***Where would it fit into our curriculum, how could we make it cross over into all areas of STEM? How will we be able to deliver this to all students and make it engaging. How would we begin the unit? What parts if any do students build? How do we make their learning concise, engaging and measurable?*** These are the questions we want to answer through our learning journey.

### ***Paras Gonzales- Team Leader***

#### Curriculum Planning

In July, I began planning how we will embed robotics into the curriculum. Timetables were released and we decided to 'trial run' the curriculum plans (CP) with our year 10 cohort who we knew that we could stretch and challenge with the opportunities we provided. Furthermore we had students who were part of the initial after school club who could support others with their building and designing of the robots. At this stage the CP developed was at its embryonic stage in July. We needed to know how to pitch it to the students that was age appropriate and link it to other STEM subjects. I had to do further investigations into what prior knowledge students had from their STEM subjects and work with specialist teachers to identify areas students would review and/or learn with us in D&T.

#### Robotics Club Launch

Our club last year attracted 36 applicants (students had an application form to complete). We invited 24 students to participate as we only have 6 robots to work with. This year we launched the club and we had a **72 applications** to join from year 7- year 13. As a team we all sat down to identify who were the true enthusiasts to join the club. Our selection process was different as we decided that we all had to fight our corner to identify true enthusiast for our specialist areas. Our areas were as follows:

- Mrs Gonzales: Girls into Engineering
- Ms Warr: Yr 7-Yr 9 Enthusiasts, More able students
- Mr O'Brien: Computing/Programming
- Ms Omerbasic: Maths and Yr 10-Yr 13 Enthusiasts
- Mr Mahr- SEND perspective

### ***Ms Mikyla Warr***

Robotics is completely new to me, so I am currently learning it as I am teaching. As an NQT I have been anxious in teaching the technical knowledge but felt confident with using the robots as I was part of the after school club last year. I have been developing the CP further this initial ½ term by working with my year 10 class. From the onset the students were completely engaged in their learning. I decided to set them an initial challenge called the 'Squashed Tomato Challenge' from Practical Action to get the students engaged in team work. This looked at real life scenario of farmers in Nepal who grow crops on the mountains and need to transport their crops down the mountains to local villages. This challenge introduced the students to simple machines and they found it highly engaging. We then looked at engaging students by looking at motions, mechanism, simple machines, and chain reactions. Watching the students actively learn and reinforcing their understanding has been clear as all students have been able to explain what they have learnt.

I have particularly found the physics and mathematical applications difficult but have been supported by teachers in maths and physics. I feel the challenges lie within knowing beyond what I need to teach. I often found myself struggling in lessons when students would ask me questions beyond my knowledge.

We concluded with students programming their robots to moving potatoes from A to B which was a slight variation to what the initial challenge.

### ***Mr Patrick O'Brien***

As the Computing Specialist, I have worked with Ms Warr and key students in understand the simple programming used for the VEX robots. As it is similar to Scratch, it is very intuitive and most students have learnt how to use it. As part of the after school

club I want to work with students on the programming that is similar to Python and C+. It was positive to see the number of Computing enthusiasts wanting to be part of the club and also watch year 10s programming their robots using the I pads.

**Ms Omerbasic**

As the Maths lead, I have been able to support with queries that the D&T teachers have had when unsure about particular concepts when looking at gear ratios and mechanical advantage. I am looking forward to working with the team further- beyond the classroom and challenging the students when building the robots. I am particularly excited to see some of my A level students eager to join the club and engaging with them beyond the classroom.

**Mr Mahr**

As the SEND lead I have requested and received the SEND register and have identified key students that will benefit in the opportunities beyond the classroom. As part of the Robotics club last year, I worked with a small cohort of SEND students. I was able to identify how we could potentially offer the students way to develop their knowledge using a range of potential strategies to work in teams and learning styles that could benefit their understanding. The purchase of the I pads for their use when programming will be of particular advantage for some of the SEND students as some of their learning style is quite visual and the app we us support this.

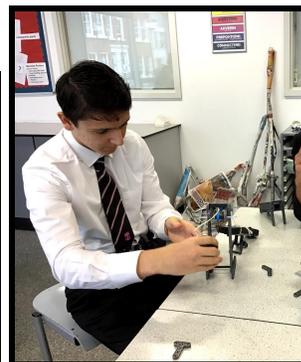
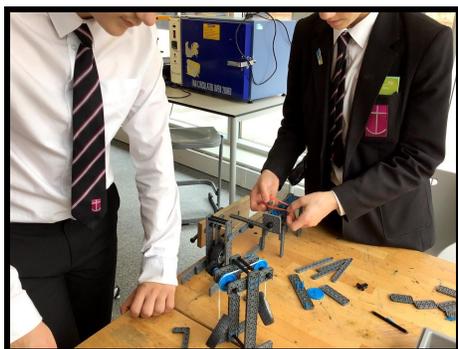
**CHALLENGES AND MOVING FORWARD**

| Current Challenges   | Moving Forward  |
|--|---|
| <p>Purchase of the additional robots as there has been a high demand for the Robots and Vex Robotics are anticipating the delivery of them in 8 weeks from when they have been ordered. We may need to rejig our plans for implementation to ensure the best delivery of the curriculum and after school club.</p> <p>As D&amp;T teachers, development of subject knowledge in unfamiliar areas of Science, Maths and Computing.</p> | <p>Moving forward we have reviewed the learning year 10 have completed in this ½ term and identified areas that could be taught at KS3 and also KS4 in D&amp;T.</p> <p>Identify how to measure student success at KS3 and KS4. Collect feedback from students about what has been learnt, what would they like to see moving forward, how we can track and assess student learning.</p> |

In the next update we will provide statistical data on how we have chosen the students for the after school club to inclusivity of all students.

Expenditure: July 2018- Items purchased with the RRSP merit award of £1000.

| Item                           | code     | Quantity | Price per unit | Total inclusive VAT |
|--------------------------------|----------|----------|----------------|---------------------|
| Ipad 32gb 9.7 inch             | MR7F2B/A | 3        | 303.6          | 910.8               |
| Vex IQ smart radio             | 70-7947  | 6        | 11.99          | 71.94               |
| Air engineers drone            | 70-1201  | 1        | 143.99         | 143.99              |
| VEX IQ motor                   | 70-7911  | 2        | 14.99          | 29.98               |
| VEX IQ Tank Tread & Intake Kit | 70-7922  | 2        | 19.99          | 39.98               |
| Ipad case                      |          | 3        | 9.99           | 29.97               |
| glass protector                |          | 2        | 2.95           | 5.9                 |
| Total                          |          |          |                | 1232.56             |
|                                |          |          | excluding VAT  | 993.222             |



Here are images of students in year 10 working on a chain reaction using the parts in the Robotics Kits.

