

## **December / January Diary Entry**

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

December and January have merged into one extended diary entry due to the Christmas period holidays.

### **DELIVERING ROBOTICS WITHIN THE CURRICULUM**

December has been a busy month with planning and preparation for the new year. This month has been the chance to collate and process all the work we had completed and identify the strengths and weaknesses of the Robotics curriculum. We decided to strip down the project and identify what parts of the curriculum plan should be included within the KS3 curriculum plan. The delivery of the lessons must be clear, concise and differentiate to accommodate the needs of all students. Key questions we posed in the development of the KS3 Robotics and Automation include: **How much content should we include? What practical elements must we incorporate in the design and problem solving component? If expecting all D&T staff to teach the curriculum what challenges does it pose for staff who won't have the confidence to engage with the topic? How can we make it inclusive for all staff and students to be able to work with the project.**

Through working with the Year 10 class, we discovered that the students were engaged from the onset and working in teams gave them an opportunity to identify the roles each person will have in the project. A lot of it became self-directed learning and the teacher became the facilitator within the classroom. As part of the theoretical knowledge, it became valuable for students to see direct links with Physics and Mathematical Applications. Furthermore extending their understanding of its application in a real world context. With our KS4 context, to make the theory engaging we asked students to model how automation can work, what systems are in place, and also look at articles about how companies engage in the use of automation, new technologies and the impact it has and will have on the world.

**For delivery at KS3:** By the end of the Academic year, all student in Year 8 have had the chance to build the base bot, set up and run the robot and then have the chance to program the robot to complete simple tasks. This will be the basics for the students before entering KS4.

**Challenges we face within curriculum:** Accessibility to resources / Tracking and monitoring parts and components before and after lessons (there are 100s of components per robot) / Ensuring students all contribute to the task at hand / Set up enough of a challenge for all students to engage in the project by ensuring we scaffold the expectations we want students to achieve / How to be able to offer all students to access the robot kits and give them enough time to engage with it before offering it to a different class set.

### **MAKING THE AFTER SCHOOL CLUB INCLUSIVE**

#### **Mr P Mahr- SEND Lead in the project**

So far this term we have had a group of SEN students working on building a working robot from one of the starter kits. The first week the group of four students were assigned the roles of either builder, architect (person reading the instructions) and supplier (person finding each part and handing it to the builder). Each week these roles shift around for each person to experience each role.

Questions we are considering throughout this journey:

*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?*

Aims of the sessions focuses on:

- Creating a dedicated time and space for the activity
- Using non-verbal communication as much as possible
- Using declarative language instead of commands or questions
- Joining and challenging at each step of the activity
- Encouraging collaboration and pretending

My role working as the adult facilitator for the group is to provide prompts as necessary and keep the group on task. Emotions can run high during the construction phase and there is usually one person who insists on doing things in the correct way, and another person who loves to try things several different ways. The adults aim to support positive interactions and suggest compromises between the students to improve their rigidity of thought.

### **Ms M War- LATEST NEWS: A KS3 girls Robotics team as part of the club**

We have had a number of Year 7 girls wanting to join into the Robotics club, however, they have had many prior commitments on the day we run the club. We have decided that we could offer them a different day to attend after school to participate.

### **Encouraging Girls into Engineering- A Community Push**

This month I have been in discussions with management about taking the girls into Robotics one step further and providing a chance for students from local schools to attend a day session at the Academy. Purely working on building robots, being set challenges and coding them. The plan will be to have women engineers come in and work with the girls and give talks. I have spoken to VEX and they are willing to support us on this venture and get some other key initiatives involved. We are at the stage of setting our feelers out and seeing who would be interested in attending.



*Year 7 Students engaged in the challenge of rebuilding a robot to complete set task*



*Year 9 girls who are considering Engineering as a career pathway as they enjoy problem solving*



*6th former re-designing the 'Clawbot' in order to meet the challenge of variable heights*




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As part of the funding from Rolls Royce, we purchased an additional three VEX IQ robots. This way we will be able to distribute the robots so we have a class set and also after school club set. Due to unforeseen circumstances we are still waiting on the VEX V5 robots which the older students were meant to use during the after school club. Unfortunately due to the demand of the new robots globally we do not know when they will be delivered, therefore have had to devise a plan to distribute the current kit we have to support the learning in lessons as well as keeping the momentum going with the after school enthusiasts.

**Mentor Visit:** In January we had an exciting day when Tom L, our mentor, visited us at the Academy. Students and the Robotics team were buzzing and excited to showcase what we have achieved. Tom was also kind enough to present and chat with our keen enthusiast from Year 9 to Year 13 about career paths and his role as an engineer at Rolls Royce. He was asked an array of questions and student found his chat very informative. Listening to the talk and some of the questions being asked really brought it home for me and the value of what we are currently trying to implement in the Design and Technology curriculum at Chelsea Academy. His talk fused together the importance of STEM and how relevant the content we are delivering to the world of work is. Tom also had the opportunity to meet our true Robotic enthusiasts to discuss what they have learnt thus far on the journey. We benefited by the visit as Tom had a real chance meet some of the students who we have been working with and also a chance to discuss at length the project thus far and where the coming months will be leading us.

***Schedule for the coming term:***

<p><i>Our local community and the World of Work</i></p> 	<p>We have an exciting opportunity to take engineering/design enthusiasts to <b>Lots Road Power Station</b> for the day to see the construction site and development of the site. Students who are involved will come back to school and present what they have learnt to their year group in assembly.</p>
<p>Masterclasses in Engineering @ the Royal Institute</p>  <p><b>The Royal Institution</b> Science Lives Here</p> <hr/> <p>Masterclass network</p>	<p>Five students have been carefully selected to attend a series of <b>Masterclasses in Engineering @ the Royal Institute</b>.</p>
<p>Girls into Engineering/ Coding Day (Local schools)</p> 	<p>In the nature of sharing good practice, girls are invited from local schools for a full day at the Academy to build, problem solve and compete with each other on different challenges. Students will have guest speakers (aspiring woman engineers) to speak to them about their life as an engineer and their accomplishments.</p>
<p>Implementation of Robotics into KS3 curriculum</p>	<p>From this term on, Robotics will be immersed into our KS3 curriculum after trialling it with our KS4</p>

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class last term. The aim will be to set specific challenges, so students can identify their strengths, and be able to problem solve in real life scenarios using robotics, programming and automation.



*Mentor: Tom L giving a talk to aspiring engineers*



*Chelsea Academy aspiring engineers*

Expenditure to date:

Item	code	Quantity	Price per unit	Total	status
Vex IQ Super kit	228-3660	3	269.69	809.07	received
Vision Sensor	276-4850	1	59.99	59.99	pending
V5 Classroom Super kit	276-6550	2	924.99	1849.98	pending
V5 Competition Starter	276-6610	1	699.99	699.99	pending
Laptops				0	
Misc Purchases				0	
			<b>total spent</b>	3419.03	
RR GRANT £5000			5000		
			<b>left over</b>	1580.97	

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