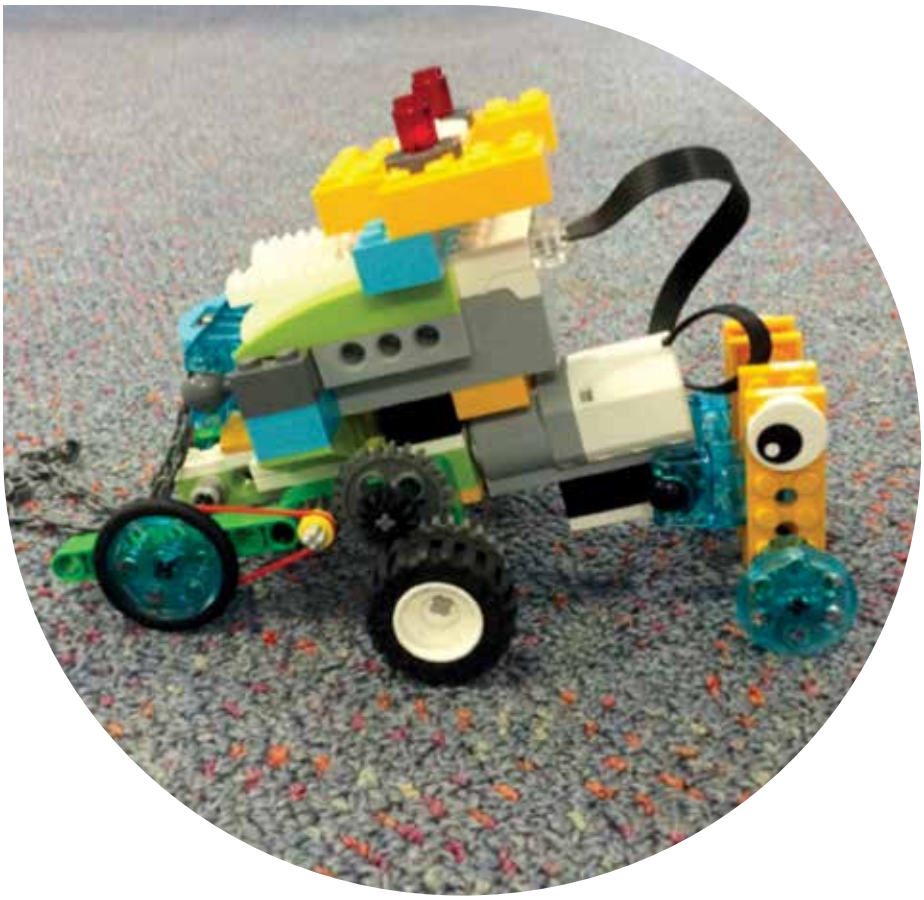
Alamanda College

ROBOTICS NEWSLETTER

ISSUE NO. 7



From the first day, we were instantly engaged and immersed into the world of robotics. We started to follow the procedural instructions left by Mr Pace & Mr McGill to complete a robot. This began our journey of discovery using the MYP design cycle to inquire, analyse, develop ideas, create solutions and evaluate our work to produce the ultimate 'pull of war' champion!

In team's we started to research on our topic of robotics. Some of the members of our class already had a sufficient amount of knowledge to coach and explain to others the relevance of certain objects and how they work. We inquired into and analysed each other designs, so that it could help us make our own robot perform better. We also reflected on previous designs that we already knew about. This was our initial inquiring and analysing stage, which we would do continually throughout the design and development process of our robot.

When we got to the second stage we were starting to create ideas for how we could modify our robot. Some groups did a really good job of inquiring and analysing at this stage. This would be because those who actually researched would have more knowledge of modifications, so they would have been able to develop more ideas then others. Once we had finished it was time for the third stage, creating the solution.

The problem to solve in this task was to make a way to help the robots pull objects or other robots proficiently. The class made some really creative ideas like adding gears and making the wheels turn sideways and wobble a little bit. Then we were ready for the fourth and final stage, evaluating.

At this stage, it was time to evaluate what we had done so far and BATTLE other BOTS! During this stage, the class had to look at what they had done and look at how to improve the robot. It was kind of like a big reflection whether you won or lost to see what improvements needed to be developed and created.

For robotics, we continually worked through the MYP design cycle stages and as a result we got eight creative robots and two of them are going to the Year 5 battle to crown the 'pull of war' champion.

From having experienced this task I think that the four different stages are crucial to success. This because it prepares you for the task and enables you to go above and beyond! - ***Alyssa, Asia, Victor, Kavin 5F***

PREP G

In Prep G, we have been teaming up with our Grade Six buddies to work with the Beebots. There were a number of different stations set up around the room. These included world maps, grids and picture story settings where we programmed and commanded the Beebots to go from place to place in different directions.

Zara said, "I was very excited to play with the Beebots because they are my favourite!"

Brody worked cooperatively with his buddy, Cooper. He said, "you had to put your Beebot somewhere on the map and let it move to a different place by pressing the button"

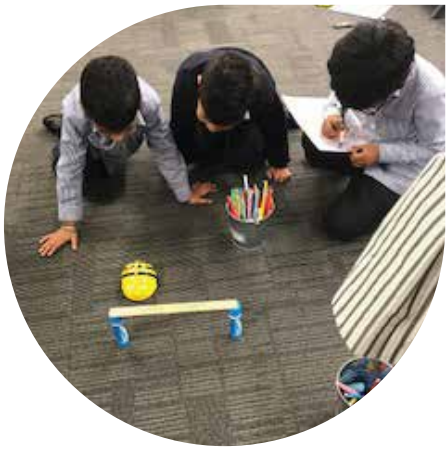
Samar used a different robot called an Edison. He had to move the little car by clapping around the grid. "I loved when the car scribbled all over the map, it was really funny!" ***- Ms. Rene Bernardo, Prep G***

PREP H

As we embark on our new Unit of Inquiry, Prep H has been a risk taker by having a go at using Beebot to share some memories they have with the rest of the class. Students worked cooperatively in small groups to take Beebot down memory lane. Each group created their own grid as well as interesting memories that they thought could belong to their Beebot. They were knowledgeable when using some elements of 'Memoirs' which included emotion, past experiences, life changing moments and Beebots 'point of view when designing their grid (map). Within their groups, students were able to create codes that directed the path that Beebot would take. Team members were reflective when codes entered did not replicate the desired path and discussed

ways to achieve success. Finally, groups showed enthusiasm when presenting their 'memories' to the rest of the class using imaginative language and expressive emotion. Prep H is looking forward to have Beebot return and create more exciting adventures together! - ***Ms. Devi Subramaniam, Prep H***

PREP N



Students used the Beebots in partners with one student identifying the heaviest/lightest item and they had to write the code.

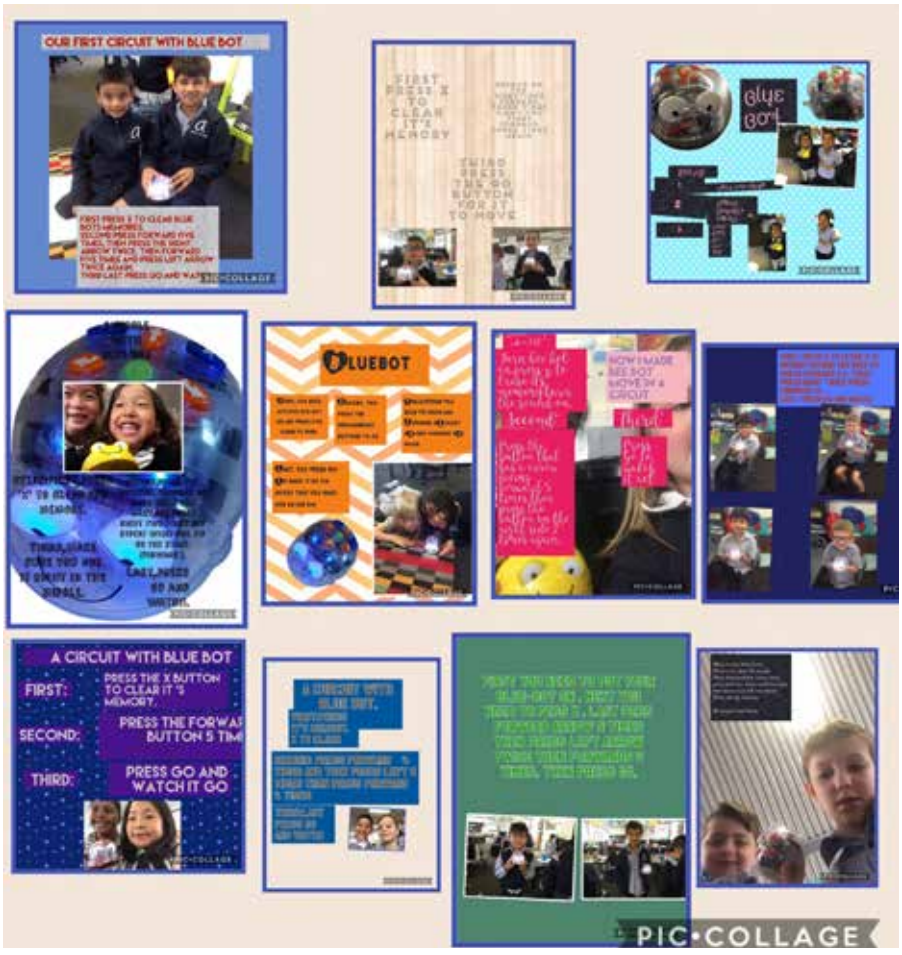
This week students in Prep N were exploring mass and comparing everyday items which were lighter and heavier. Students used the Beebots in partners with one student identifying the heaviest/ lightest item and they had to write the code. Their partner would then put Beebot into action. All students had a turn at writing the code, comparing mass and then programming Beebot. Salma stated that "I am sending Beebot to the glue stick because it is heavier than the pencil". Dhruv explained "Beebot is going under the bridge to the pencil pot because it is heaviest" and Aahil said "I want Beebot to go to the ruler cause it's the lightest". All of Prep N really enjoyed this hands-on activity. - ***Mrs. Joanne Foster, Prep N***

ONE G + H

Today we completed a Robotics lesson. First, we all sat in a circle and learnt how to use the robot. Then we chose a partner and the teacher set up all the robots. We had to complete an obstacle course with our robot. We had to plan our directions before we programmed our robot. I tried my best at doing it. It was lots of fun. - ***Nova Hawes, 1G***

Today we played with robots and we learnt about the buttons and the directions it can go it. My partner and I worked hard together to make our robot go in the right direction. I was caring by not dropping my robot. - ***Chloe Daniaro, 1G***

Today we participated in a Robotics lesson. First we programmed our robot to go forward, backwards, turn left then right. Then we made a track and



ONE G + H

tried to program the robot to go through the track. My partner and I were successful. I was a thinker the whole lesson because I had to think about the right directions the robot needed to go in. ***- Dhiman Guna, 1G***

Today we participated in a robotics session. First we programmed our robots to go forward, backwards then left and right. Then we made a track and tried to go through the track. My partner and I were able to do it right. We found it took 19 directions for the robot to get through the track. I was a thinker because I needed to think about how many steps we needed. - ***Aroosh Achanta, 1G***

In One H, students were curious while writing algorithms. They showed commitment when sequencing steps required for Blue-Bot to move in a circuit. Students continued to develop their understanding of procedural text writing and how to use directional language, such as left, right, forwards and backwards. Students worked with partners and showed enthusiasm while remaining open-minded to improving their knowledge of how to make the Blue Bots move. ***- Mr. Erik Stewart, 1H***

TWO G

In grade 2, we have been continuing to integrate the Dash and Dot robots into our classroom learning. The robots have allowed us to develop our skills when solving complex problems. Recently we have been programming Dash to create different shapes on the floor. The students are enjoying applying their knowledge of length, to calculate the perimeter of each shape that Dash creates.

In 2A, Amelia was able program Dash to create a simple square with 30 cm sides. She then used her knowledge of addition, to calculate the perimeter of the square. Denham and Naitik were able to extend their ability by using their knowledge of angles to program Dash to complete an octagon on repeat endlessly. They were then able to use length of the sides to calculate the octagon's perimeter. Soon, we will further use our knowledge of Dash to help us calculate the area of these shapes. ***Ms. Hannah Droege, 2F***

THREE J

As the spring racing carnival draws to the end, the fun and excitement of racing is just beginning for the Year 3 students at Alamanda College. Just like the Melbourne Cup, a vast amount of practice and effort is put in to the build-up of the 'race that stops the nation'. Each student in Grade Three will be creating their own horse covers for their sphero by using a large plastic cup and horse template. They will be designing and decorating their covers to create unique and recognisable designs for each competitor and will have their favourite number displayed clearly. Students are focusing on developing their coding accuracy and precision and will need to save their code for race day. A race track has been designed to create consistency across the ten Grade Three classes. Each class is beginning to practice their coding skills in preparation for the main event.

The learning intention for the Alamanda Sphero Cup is that good inquirers are able to code a sphero to follow a track using block coding. Students will need to work both independently and collaboratively to experiment with different codes, analyse and evaluate the success of their code, and make the necessary changes. Students will be developing their decision making and problem-solving skills along the way in order to code the sphero.

Each pod will hold a competition within their classroom and will compete for the top two finishing places. The two students who have coded their sphero with the greatest accuracy and the fastest time will move on to the finals against all the Grade Three classes.

Students who have already began coding their sphero's have shown enthusiasm and commitment towards the task. They are applying their knowledge and are using their thinking skills to develop the most efficient code for race day.

Classes will be looking into the probability of different sphero's winning and will be providing explanations as to why they believe a certain horse has a greater chance than others. They will consider the factors that affect the success of a good code as well as the amount of practice and expertise certain students have in regards to coding.

We look forward to race day and will keep you all posted in regards to the results! ***- Ms. Louise Wylaz, 3G***

FOUR F

In 4F students have been putting their coding skills to the test. They applied their knowledge of angles, shape and fractions to program the Pro-Bots. Students worked independently and cooperatively to problem solve, drawing polygons and dividing them into fractions. Plans were made though not always successful. Students were thinkers as they worked through the task.

In this task I was programming Pro-Bots to make different shapes and fractions. In order to program them we needed to put the turns they need to take along with the degrees and how many centimetres we need it to travel if it goes forward or backwards. Today I learnt things I didn't know about degrees. A struggle I had was making the Pro-Bot create quarters in one square. I constantly needed to go over my coordinates and fix my mistakes until it did what I wanted it to do. Next time I will learn from the mistakes I made today and hopefully I will be able to create more shapes**.- *Sienna Hooper***

We learnt that all angles have to equal up to 360 degrees and that when using Pro-Bots if you do 60 degrees on a triangle, otherwise the bot will go into another direction. Instead you have to put 120 degrees so it equals up to 180. The challenges we faced were splitting the shapes into equal fractions and we also had trouble with figuring out what the angles are. Next time we will start trying to make rhombuses and other shapes. ***- Nicholas Watson & Raymond Liu***

Year 5 Robotics Design Challenge - Build and program a pull-robot

In small groups chosen by the class teacher, the Year 5 students have been following building instructions to create a basic robot. The students have been asked to modify the standard robot as to make the strongest, most efficient robot that can pull weights on a trailer. They are testing their robot by adding small objects to the trailer until the robot stops moving. Throughout the process, they have been required to keep a detailed design journal using the IB Design Cycle.

Here are some photos and Design Journal entries from 5A!

Robotics Design Journal - Day 1
Group: Atharva, James Christiaan and Rishi

Today, on the 31st of October, our group constructed a basic Lego WeDo robot. This robot is used to push and pull objects, but as it is not yet modified it can only push and pull pieces that weigh up to 64.4 grams. A reason why is that it is just a basic design and not the real thing. The machine is relatively unreliable and doesn't lift the amount that we believed it could. A problem we had today was that the machine broke, but luckily, we were able to fix it. Our group had a really bad time in day 1. Our kit didn't have 2 major parts; the battery and the motor. Then we were running our code and none of us were paying attention to the robot when it was moving and it fell of the table. We had a tough time building it again.

Robotics Design Journal - Day 4
Group: Nathan, Lachlan and Rinzen

Our robot is called Robert. Today, we made some more modifications to Robert. Currently, our robot is shuddering when it moves and rears up on two wheels. We have figured out why our robot shudders

- the crown gear is partly wedged in between an overhanging block, which means it has some difficulty turning. We are currently fixing the crown gear and freeing it so it doesn't stutter. So far, I think our robot is doing reasonably well, but sometimes our modifications don't work that well. The PYP attributes our group demonstrated was thinker, as we thought about the problems and attempted to fix them.

Robotics Design Journal - Day 2
Group: Lucas, Will, Vraj and Jordan

We started to modify our robot by replacing the discs with wheels for more grip and power. It gave our robot extreme speed and power like we hoped for. Next we tried adding a second gear so it would spin the wheels faster. It didn't work - both the gears couldn't fit into the main motor. Next, we attempted to replace the gear with a bigger one but it seemed loose so it didn't manage to spin properly.
Then we had a new idea to try and make it with wheels on the front to make it like a car with power to make it not flip over and with more friction. After testing its limits it could lift around 1.3 kg (about 1 MacBook and a mini iPad). The PYP attitude that we showed was open mindedness, because we tried new experiments that were very useful and the new upgrades that we made managed to pull a MacBook.

Robotics Design Journal - Day 2
Group: Dayna, Evelyn, Angelina and Navaea

Today we changed our trailer and made it bigger and we made the trailer have stands on the corners. We then added legos that make it slide really well too. We tested our robot by it carrying a MacBook and it worked. Then we accidentally broke our robot so then we had to remake it. We are inquirers because we really love doing robotics and working as a team.

Robotics Design Journal - Day 2
Group: Jana, Karenzja, Katijana and Sana

Today we changed our robot's tiny, flat wheels to bigger wheels with better grip. It was able to pulled 227g. We then changed them to even bigger wheels with better grip, but the bigger wheels didn't work that well because they got stuck to some of the other blocks that were connected to the rounded beams. We added some touches like a flower and we added 4 more wheels at the back: 2 small wheels that were on a rounded beam, and the 2 big wheels to the other beam. We had some troubles with our robot because it fell and broke because it didn't stop when it needed to. We changed the place where the 'arms' that pulled the wagon were to a higher place to help the wheels move better and to make the weight more at the back of the robot to let it drive easier. We worked very well today as a team and everybody helped by doing something like helping with the coding, upgrading Charlotte_27 and writing in our journal.

FIVE D

Robotics was very challenging. The purpose of this challenge was how much each group's robot could pull. My group included Aaron, Yaamini and Ngor. We were all very cooperative and helpful. We started off making our standard robot and tested it. We soon versed a group and lost. The reason why we lost was the standard robot wasn't good enough to pull and hold so we upgraded it and added more wheels with longer sticks on the edges. The purpose of putting more wheels was to make it easier to pull. We versed the team again and won. This was a fun and great activity to do at school and a great way to learn. ***- Lorielle***

When we did robotics, I was put into a group with Emily and Utkarsh. We played around with the options and finally settled on the standard pulling robot. We had to think of ways we could improve if we wanted a good chance at winning the 'Tug Of War' challenge so we added two more wheels on the back. To make it safe we put it on its back and tried to make it so that it wouldn't tip over. We ended up breaking the robot and having to re-build it. We finished building the robot and then played against Ruthvik's group. They had a bigger robot and more wheels but we won because their robot fell apart. I liked doing robotics in my class because I like to build things with lego. ***- Evelyn***

During the two weeks, we had to make and battle other robots. My group, Group 7 were having several brain waves to help us win the showdown. Our group's robot had a big weight at the back so it wouldn't tip over and break apart, at the front we had a bit of a forklift action, so we would be able to pull better. I think that we could have had a better program function that would help the pull without adding any other modifications. Our group was being knowledgeable and respectful during this project because we listened to each other's ideas. ***- Karsten***

My group's robot was heavy and it could pull an Ipad with a jar on it. Our robot was really strong because we added each person's ideas to modify the robot and to improve it. In the championship, it was my group vs Ngor's group, it was a tough game but my group won at the end. Everyone's group was hoping to win so they could be part of the final test. I'm just relieved my group built a successful robot - ***Harjas***

YEAR SIX

In class, we have been using the LEGO EV3s to make them move around a map of Australia. There are coloured areas that we have to avoid with our programming, so we have set up colour sensors on the front of the robots that know what colour is underneath.

We have had to use some trial and error processes to work out which colours the sensor will read best. The trial and error process is very frustrating because it often goes wrong, but we just have to remember that is how we learn.

We can use this kind of thinking in other areas too. For example, we can think about how we solved coding problems when working on our numeracy skills. Sometimes a worded problem needs you to keep trying different approaches until one way works.

We feel more confident working with the EV3s now and in the future, we will attempt to make it follow a line all around the outside of Australia, just like Matthew Flinders. We will also add the code to make the robot say certain things when it reads a colour underneath it like "oh no! I've crashed into the ocean". ***- Sonny Crawford & Joel Murnane, 6D***