STEAMing Ahead

Our vision: *To create a learning culture of curiosity in which students will engage in the world they are living in.*

Term 1 STEAM Newsletter

Dear Parents and Caregivers,

Welcome to Westlake Girls and STEAM to our new STEAM students and their families, and welcome back to our returning STEAM students and families.

As term 1 comes to an end, parents get a chance to find out what their daughters have been up to in our first STEAM Newsletter of 2019 which captures some of the highlights of term 1.
We hope our STEAM Newsletter provides the forum for celebration and reflection on the amazing opportunities our students have been involved.

Our vision in STEAM is “To create a learning culture of curiosity in which students will engage in the world they leave in.” It is fair to say that we have definitely started the year STEAMing Ahead!

Our Year 9 STEAM students seem to be settled into school life and STEAM as they continue building on strong relationships with their peers.
The Year 10 STEAM seem in full flow building on their skills from last year and creating opportunities to experience authentic learning by developing their Community projects ideas.

I hope your daughter has taken the time to show you the course outline for her STEAM course this year, this will provide you a clear breakdown of the themes, projects and knowledge covered as well as the skills the programme equips our students with in order to be future ready.

I also would like to take this opportunity to reach out to our parents community. I had the privilege to be invited to take part in a panel discussion at Microsoft NZ on International Women’s Day. The discussion focused on how to inspire girls into STEM. It is great to see these conversations happening in our business/industry communities. And although we are doing the utmost at school to inspire and equip our girls to STEAM ahead, the research in this area is very clear: Our girls need STEAM advocates at school as well as at home, find them a mentor, role model, it could be an auntie, family friend, share good stories, help them realise how STEAM can also make an impact in lives and make a difference in the world, help them make that connection.
Our girls need to hear your STEAM success stories. Please support us in getting your stories to our girls. We all share a common vision, let’s team up and take action. Please email me if you would like to get involved and get your stories, expertises to our students

Have a lovely Easter Break.

Susana Tomaz (Stomaz@westlakegirls.school.nz), TIC for STEAM, Robotics and FutureTech Teacher.

Year 9 STEAM

English and Social Studies

We have thoroughly enjoyed our first term with our new Year 9 STEAM students covering the theme of global citizenship. In light of the horrific events in Christchurch the importance of understanding diverse beliefs and values across cultures and societies has become even more important. English has focus on a literature study of Andy Mulligan's novel called Trash, set in a rubbish dump in the Philippines. Learning in Social Studies has connected with the themes present in Trash through looking at how to assess a country's level of development through the analysis of statistics, the UN Global Globals and a case study about cash crops such as cocoa and bananas, which can all influence a country's poverty levels. They have also written blogs on global issues they they are passionate about

This integration has been supported by our shared lessons, which have included guest speakers such as volunteers from a microenterprise project based in the Philippines called Above Rubies and General Marketing Manager Faye MacGregor from All Good Organics. Faye came in and spoke about bananas and how fair trade of this cash crop can help farmers in the developing world. Furthermore, students are using cocoa and chocolate as a theme for their static image common assessment task in English.

Joy having a go at making beads out of old magazines with Above Rubies and some of the products made by women in the Philippines.

Fair Trade Chocolate and All Good Banana Sundaes

Blind Auction

We would like to thank the parents and students for their very generous support of the Blind Auction. We raised just over $250 which has been donated to the Christchurch Foundation to help those directly affected by the Christchurch terrorist attacks last month.

Maths and Science

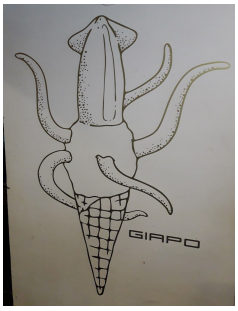
Our year 9 students had a sweet start to the year, in the theme of "Chocolate". They started by researching and learning about the ingredients in chocolate and then designing an experiment to separate the fat to measure its content in chocolate as a percentage. In science they focused in learning about various separation techniques as well as pure substances and compound substances linked well to our theme, helping students design and conduct the experiment. In maths students used blocks of chocolates to help their understanding of fractions and having to apply the number skills to calculate the fat content. We also had a visit from an expert, Ms Hamblin, who worked in a chocolate factory before she became a

teacher. Students asked many interesting questions and learnt about the process of chocolate making.

The highlight was a trip to Giapo in CBD, where the innovation and integration of ideas were in full action.

Below is an article from Caitlin Kuan about the visit.

"Today we went to visit Giapo to learn about the ideas are based off. I found the wearable ice cream an unusual concept which made it unique. The concept and creation were pretty cool. I really liked the colossal squid. I couldn't believe it took him 12 years to come to these creations. The way they created the mould with 3D printed pieces, hot plastic & a vacuum was also very intriguing. Because it was cool to see how they would create the moulds for the chocolate additions. But not just that, I love the reason behind the company. How they wanted to change the function of ice cream. One of the ice creams that shows a different function is the selfie frame ice cream.
I tasted some new flavoured/concept of ice creams, like the chips & ice cream, chocolate and bread. Many of the weird combos were surprisingly nice like the chocolate ice cream & bread. I learnt that they focus on the function rather than many flavours. I liked tasting all the different ice cream because there were some unique flavours like the kumara, chips and ice cream & chocolate mousse with Maori bread.



The ice cream tasting was very memorable. Also ALL of the different styles of ice cream like the sky tower, colossal squid & selfie frame add-ons. All the different ice cream were all very different & delicious. The unusual combinations we so different that it made it memorable. Also because I did it with my friends. The creations were so creative & mind-blowing."

Papertronics and E-Textiles

Going to Papertronics and E-Textiles made my circuit complete and now I am lit up! This term we have been learning about circuits and the materials we can use to incorporate circuitry into our own projects. Ms Tomaz visited our class to explain the science behind circuits in an engaging way, by building a large circuit we could interact with. In class we then had the opportunity to design and create our own double paged pop-up that included LEDs, coin cell batteries, copper tape and sustainable materials, such as recycled card.

Exploring careers

"Our class was fortunate to have guest speaker Donna Cleveland, lecturer at Auckland University of Technology, show us various electronic textile projects she has been involved with. Not only did her projects help people in need, such as the sock that would detect the area of pressure in the foot for people with diabetes, she also created wearables that are interactive and can change colour based on your mood. She showed us a project she created based on a piano with fabric tiles made from conductive thread that allowed you to play music. I am looking forward to next term when we will have the chance to make our own awesome e-textiles projects."
By Lina Amer

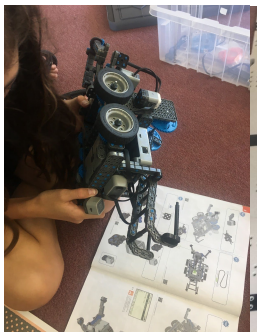
Robotics

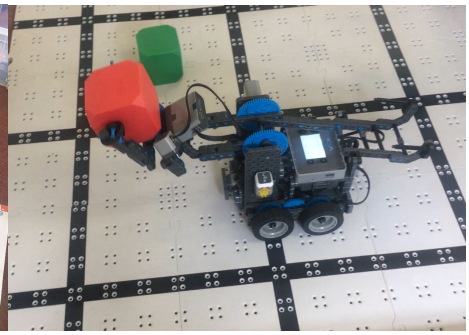
"Robotics is a branch of engineering involving design, construction, programming and more. This is an amazing, hands-on opportunity that I have had the privilege to be involved in.

We started off by building robots in teams, improving them through trial and error and paying attention to detail. After this we moved into programming. We used Expedition Atlantis software as a taster for coding then moved into RobotC and virtual worlds. This part of robotics really tested us with our problem-solving skills. Recently we did a challenge called the Gripper Challenge which was when we had to incorporate our programming skills and knowledge to create code which made our physical robots retrieve and replace a cube. This challenge, like many, took lots of attempts.

The top six skills that I have improved throughout robotics are communication, programming, designing, construction, problem-solving, and persistence. Robotics is very empowering and makes me want to take up a job that includes it in the future." By Lizzie Prescott

Please ask your daughter to show you her robotics engineering portfolio so you can find out more about the work we have been doing.





Food Technology

Students have covered some basic hygiene and safety skills before launching into their own inquiry around "structure". They have experienced a range of practicals where ingredients have been used to make a structure. This has linked to their experiences in social sciences and science where the Steam students are investigating chocolate.
Some of the students have written a brief piece about their practical designs using gelatine.

"There were nine groups in total from which only one could win. The group that won was consisting of 3 people, that named their jelly "Berry Dream."
We were given this task so we could have a better understanding of structures and how they are created with ingredients. The end result was to create a structure with gelatine that reflected a theme, tasted great and was visually appealing - and it had to maintain its form. We were allowed to bring decorations and use edible flowers from the school garden" by Manal Zainab and Honor Te Koea

"Berry Dream" By Eva, Manal and Yan Qi

Find more in our **Year 9 STEAM Blog**

Year 10 STEAM

English and Social Studies

Developing a sense of belonging is crucial to finding our place in the world. This term we have been exploring “Our Place” through the study of volcanoes and literature. In Social Studies we have been looking at key Geographic concepts such as patterns and processes in a practical way. We have also been exploring the ways in which volcanic eruptions can impact the lives of individuals and communities. In English we have been exploring “Our Place and Our People” through short stories, poetry and song lyrics which reflect aspects of life in New Zealand, and Auckland in particular. The final poems we will be analysing are calls to action – showing the impact people have had on our land, flora and fauna. This will lead into students creating their own stories – through prose and poetry.

A common interest in our STEAM class is the weekly current events quiz. This is a great opportunity for students to test their knowledge on local and global issues and to discuss these in greater detail. Watching the news and reading newspapers will really help students develop their knowledge and understanding, and give them the confidence to engage in meaningful conversations about local and global issues. Similar to Social Studies and Science, a deep general knowledge is of benefit in English. Students will gain a lot from being up to date with what is going on in the world at both a national and international level. Reading widely is also encouraged.

Term 1 Assessments

By the end of the term we will have completed the Level 1 Geography Achievement Standard “Describe aspects of a geographic topic at a global scale” worth 3 credits. This assessment requires students to be able to describe the geographic patterns of volcanoes and the processes have contributed to this pattern. In English, we have also begun working towards the NCEA Level 1 internal assessment that the students will complete this year. For this assessment, which runs over three terms, students write personal responses to six texts they have read independently. All the information for the internal assessment is on our google classroom. Students wrote their first responses over three periods in class during Week 9 of this term.

Maths and Science

Search and Rescue training mission

Urban Search and Rescue, USAR are teams that are trained to locate and rescue survivals trapped in an urban environment.
The primary role of the team is to rescue survivors, this tasks is very time critical with the chances of survival rapidly decreasing after 72 hours.
To achieve the goal the team will have to enter some of the most unstable , dangerous environments.The USAR NZ has helped in one major disaster, in Christchurch 2011 earthquake.

USAR robot developed by Massey University Mechatronics PhD student, Brendon Le Comte

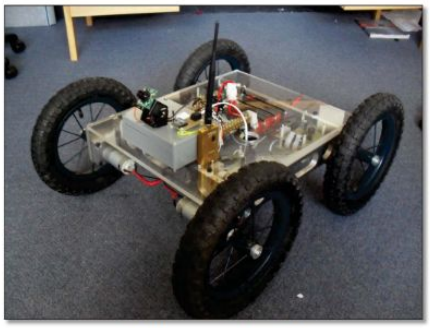


Figure 4-4. The current version of the Mother Robot

Students have been recruited to complete a training simulation here in the NorthShore, where they explore the application of robotics and computational thinking in the saving of human lives after an earthquake. They had to work in teams to complete 3 missions.

Mission 1

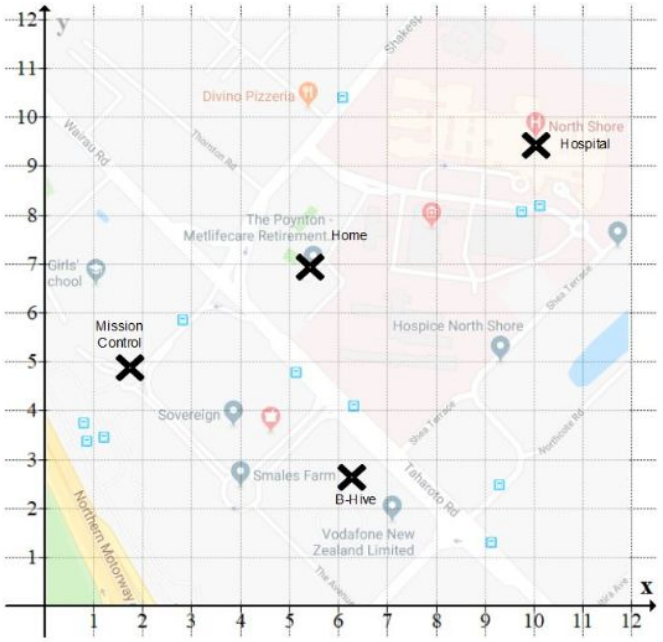
Survivor buried amongst the rubble near North Shore hospital. Confused survivor has called in, has no water or food, in shock and thinks she has walked for 1-2 sec (average speed is 1.4 cm/s). She remembers leaving the hospital but unsure on the direction she took.
Calculate the radius for the search and rescue operation.

Mission 2

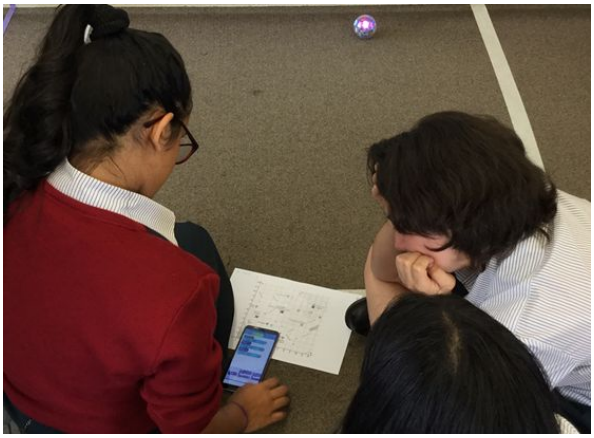
Scan the retirement village for a residence reported by family as still missing.
You will reach the retirement village if you travel on a bearing of 049° at a speed of 1.77 cm/s for 3 sec and then turn right (90° clockwise) and move forward for 1.6cm.

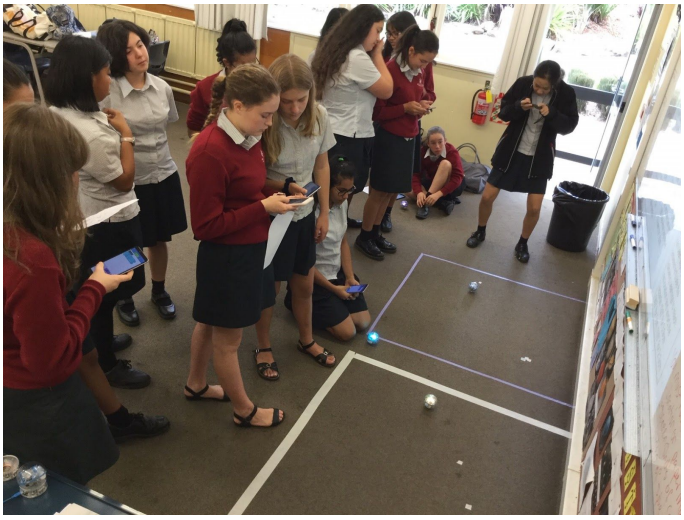
Mission 3

Smales farm- Business man stuck in underground car park at the B-hive, exit blocked by rubble,he is unhurt, has access to water and food in his car. Drone has been deployed for area assessment.Use the following bearings to reach his location and avoid the hazards: 135° for 3.9cm, 065° for 1cm, 105° for 2.3cm.



Students were required to apply maths, science concepts and take into account the impact of a major natural disaster. Some of these concepts required student to programme a Sphero robot using concepts of coordinates, angles, bearings and relationship between distance, time and speed for the successful completion of their mission.





Kinetic Sculpture

Kinetic Sculptures challenges students to attain transferable skills through higher order thinking, experimentation and creativity. This allows them to acquire knowledge they can apply to real-world situations. This year we have been investigating physics, engineering and simple machines to acquire the dexterity and thought processes needed to create an innovative kinetic sculpture. Students are working independently and collaboratively, utilizing sustainable materials while also investigating three dimensional objects. Our hands-on approach encourages students to think in real time through the creative process, to critique, deconstruct and reconstruct ideas. For us, *thinking* is not a noun—it is a verb, it is action!

Future Tech

On the 7 of March the Year 10 STEAM girls doing Future Tech had a school trip to Massey University, School of Engineering and Advanced Technology.

We had been 3D printing and laser cutting our own designs in class and it was so fascinating to see how 3D printing is used in real world application and the variety of machines big and small for laser cutting and 3D printing, the materials they used and the projects they were working on.

We had the opportunity to learn about how 3D printing came about, how valuable the machines are and why they make our lives better. Medical practices can be improved with these machines as doctors can make 3D printed models to practice surgeries on so they are done efficiently and effectively.

Overall it was such an amazing experience to be exposed to practical work and research being done at Massey University.

Here is some of the students highlights

"My Highlight was probably when we were introduced to the different types of 3d printers. I enjoyed learning different ways to 3d print, and found it quite fascinating how the actual process as in how the machine prints was acceptably simple. I enjoyed finding out how 3d printing can be used in other fields such as bio technology I was really interested because my older brother is studying bio-tech right now. I think today's highlight made me open my eyes more and answer some of my questions concerning the field of engineering."

"I really enjoyed learning about 3D printing using the white powder. It was really interested as Jean talked about that this use of 3D printing is used in health care. It is used with pregnant women sometimes. If there is something wrong with the baby, the 3D printer can print a picture of the baby in the mother's womb from an ultrasound. This means they can operate on this model to practice for this surgery before they do it for real. They do this to ensure the safest surgery for the baby and mother. I found this very interesting and it was my highlight from the trip to Massey." by Neve Cusens.

Students have designed 3D logos that express their identity and 3D printing them.
They are now designing their our STEAM awards. Above is the design of the citizenship award by Neve, Marika and Arrington.

Exploring careers in STEAM

Jason is a marketing specialist for gaming and e-sport, he is currently working for HP Nz abd has worked for other big companies such as OMEN and Microsoft. Jason can often be seen at e-sports tournaments and had even paid off his student loan through playing halo. Jason had talked about many of the career options tied into gaming such as being a commentator at esports events, professional gamer, gaming coach, digital costume designer and project leader of a STEAM team.

Although gaming is such a global wave in today's generation and is considered a norm, girls are still often discriminated in the gaming industry as it is a “boy thing”. But as mentioned by Jason the gap is slowly patching itself up, the general playership being almost 50/50. Many during the talk had gotten excited about the people Jason had met during his career in gaming, including the famous twitch stream ninja, and the heartthrob tom Felton. A question he had given was what makes a good game? All of us have played games that we have liked and disliked, and so what components exactly made it all that great. Making a good game takes a lot of components, Jason had explained. Games have to be exciting, stream-friendly and have a hook to pull in gamers.

Our Experience:
I think it was really cool meeting someone who loves gaming and does it as a career. It’s really nice to hear him talk about his favourite games and what he does for his job. He seems to really like his job and he does really enjoy working with other people and travel. He works with a lot of gamers with different strengths and he really wants more females to join the gaming industry.
By Emily Zu

Community projects

Tiny house- could this solve our Auckland house crisis?

We have been learning about the process of design thinking applied to one of our major community issue: The Auckland house crisis.

To gain empathy for the problem we have role played taking part on house auctions and we explored the idea of Tiny houses as a potential solution.

Above is a real size scale of one of the groups tiny house design.

To enable good teamwork and collaboration we started by doing some team building exercises
We are now in the process of researching some other community issues that might require an innovative solution.
Students are excited about taking action and finding solutions to some of the issues in their community.