Students were fascinated by specimens they found while cruising across Lake Rotomahana.

Waimangu a hit at Summer School

A group of students went on a geothermal adventure last week to explore the science and engineering marvels on show at Waimangu Volcanic Valley.

The visit to the volcanic valley, which lies within the Rotorua-Taupo volcanic region, was part of the Hill Laboratories Waikato Science & Engineering Summer School.

From 29 November to 4 December, 40 Year 12 students from around the central North Island spent the week at the University of Waikato, giving the students the chance to get a taste for what it can be like to study science and engineering at a tertiary level.

The group was hand-picked from 81 applicants by Rotary Clubs within Rotary District 9930.

The week began with a two day field trip during which students explored the areas of Rotorua and Taupo. The group searched for larvae at Kerosene creek, collected zoo plankton samples, went for a guided walk through Waimangu Valley, and enjoyed a cruise across Lake Rotomahana.

Hastings student Emma Bone from Karamu High School said the week-long event has been an invaluable experience.

“The experience has been amazing. Not only did the field trip expand my science knowledge outside of the classroom, but also created the opportunity to make lifelong friendships.”

The remainder of the week was spent in Waikato University's science and engineering labs. Students were tasked with analysing water samples collected during the field trip, looking at plankton under the microscope, and building prototypes such as torches and Lego buildings.

“Together the field trip and labs aimed to give the group a better understanding of the environmental and social changes the local volcanic environments have undergone over time,” says Dr Ian Duggan, Senior Science Lecturer at Waikato University.

Waikato’s Science Summer School is an annual event run by Rotary District 9930 and Waikato University's Faculty of Science & Engineering, with sponsorship from Hill Laboratories.

Hill Laboratories is the country’s largest privately owned analytical testing laboratory. The Summer School included a visit to the company’s laboratories for a tour of their facilities.

“We are proud to support the future of science and technology in New Zealand. These talented young students are the future generations of scientists and it is our privilege to support them through the Science Summer School. We look forward to the contributions they will make in their chosen fields in future years,” says Martin Brock, Marketing Manager at Hill Laboratories.
St Peter’s School victorious at annual ChemQuest

Students from St Peter’s School Cambridge took out the top prize at the University of Waikato’s ChemQuest challenge held last month on campus.

First place went to Year 12 students Rhys Duncan, Gabrielle Dumble and Jeffrey Wise. The students were awarded the James and Wells trophy, $150 and a gold medal each.

For the last two years Hamilton Boys High School teams have taken out the competition, but their winning streak has come to an end.

This was also the third year in a row that all place-getters were from Hamilton schools. Second place went to St Paul’s Collegiate, third and fourth were awarded to separate teams from Hamilton Boy’s High School, followed by another team from St Peter’s School in fifth place.

The annual chemistry quiz gives Year 12 students the chance to put their chemistry knowledge to the test in a pop quiz-style challenge.

“It’s great to see students from across the central North Island enjoying ChemQuest, which seems to be more popular now than it has ever been. Being a competition it does bring out the competitive spirit in many students, but there are plenty of different types of questions for students with a wide range of knowledge and interests,” says event organiser Michele Prinsep.

“As well as covering chemistry, the quiz is an opportunity for students considering coming to university to see some of the Waikato campus and to experience the atmosphere of a large lecture theatre. This year was the largest turn-out we’ve ever had. As the event grows in popularity we could expect 300 students next year.”

The after-school event was held at the University of Waikato on Wednesday 21 October and was attended by about 250 students from schools from Hamilton, the wider Waikato region, the Bay of Plenty and Taupo.

ChemQuest is sponsored by the University of Waikato’s Faculty of Science and Engineering, the New Zealand Institute of Chemistry, James & Wells Intellectual Property and Hill Laboratories.

View photos from the event at: facebook.com/WaikatoScienceEngineering

A calling in the oil industry

Graduating with a degree in Chemical and Biological Engineering from the University of Waikato was the first step towards Hawraa Al Lawati reaching her goal of working in the oil and gas industry.

From the capital city of Oman, Muscat, Hawraa Al Lawati had positive first impressions of New Zealand in 2006 when she came here with her family to visit her brothers, who were studying in Dunedin. That good first impression encouraged Hawraa to think about coming here to study herself.

“I’d heard about the quality of the courses at Waikato University. When I visited, I was welcomed by the staff there, and they organised all that I needed to finalise the enrolment and visa issues, including my future study plan.”

In 2013, Hawraa received a High Achievement Scholarship for International Students from the Waikato University and says some of the highlights of her study were field trips to the Marsden point oil refinery and waste water treatment plant.

Hawraa will be graduating with first class honours in Chemical and Biological Engineering (Hons) and her qualification has helped her land a job on the graduate programme of Shell Development Oman LLC, which she starts soon.
Waikato engineering student wins German traineeship

A University of Waikato engineering student is in Germany after being selected for an all-expenses-paid traineeship at the University of Stuttgart.

Rochelle Molina says she feels lucky to receive a placement with the International Association for the Exchange of Students for Technical Experience (IAESTE).

“These kinds of opportunities are very rare so I’m definitely excited,” Rochelle says.

The traineeship acts as Rochelle’s work placement for her Bachelor of Engineering (Honours) degree.

The third-year student will be overseas until January researching chemical absorption processes and gas cleaning techniques during combustion.

“I’m looking forward to trying different aspects of science and engineering,” she says.

Rochelle wanted to study at Waikato because it was close to home and offered courses that focused on all of the science subjects she loved at school.

“I did all the sciences in year 13 and I loved all of them,” she says. “The lecturers at Waikato are really approachable which makes the learning environment positive and supportive.”

Trip of a lifetime to the Antarctic for first year student

A first-year University of Waikato student is preparing for the internship of a lifetime; travelling to Antarctica in February.

Nick Humphries will spend a week developing e-learning web applications to help educate future Antarctic travellers about health and safety and environmental considerations.

Launched in 2007, the Antarctic Youth Ambassador programme selects two young New Zealanders annually to do restoration work in Antarctica and educate others through their experiences.

“None of this is paid work, but I’m not too worried because I’m being paid in experience, which is so important these days,” he says.

Although studying away from home might be daunting for many people, Nick’s happy he chose to study a Bachelor of Engineering at Waikato University.

“I’m glad came here,” he says. “Waikato has a very welcoming environment, especially for new students.”

$85k boost for research

Bridgette Farnworth is unashamedly nerdy and a self-confessed tree-hugger.

She’s also the recipient of a University of Waikato Research Institute doctoral scholarship, worth up to $85,000 for three years to assist her study into non-lethal pest control.

New Zealand has a mammal problem, especially with predators – mice, rats, possums and the like. Bridgette’s research proposes that light could be used in New Zealand to deter nocturnal rodents, mice in particular.

Read more here: bit.ly/1KPrG4M

The sequence of success

Waikato University doctoral student Jessica Turner awarded multiple scholarships.

Jessica hails from Matamata and has just been awarded a Top Achiever Doctoral Scholarship of $5000 to accompany her University of Waikato doctoral scholarship, which gives her $22,000 a year plus course fees.

“I’m looking at different ways and combinations to use interaction sequences for testing purposes. Some of these sequences potentially could be hazardous, and it is important to identify these before the system is put into widespread use.”

Read more here: bit.ly/1Xg4y1L
Push for girls to log on to computer science

When Grace Nolan first got her hands on a computer, her parents hated it. "It was a Nintendo Super Mario Brothers game. They tried to ban me but it didn’t work."

That early exposure – "I was about seven" – got her interested in technology and she proceeded to delve deeper into computers.

That interest came with its downsides. She once decided it would be a good idea to click the icon that said ‘restore default settings’ and promptly lost everything.

But it never put her off and she is now just a couple of papers away from completing her undergraduate degree in Computer Science at the University of Waikato, where she is a strong advocate for growing the number of women taking it as a subject.

She helped start CS3, a support group for computer science students, and actively seeks opportunities to spread the word that computer science isn’t just a subject for boys.

"I gave a talk at my old school (Waikato Diocesan) and we had to move to a bigger room, there was so much interest," she says.

And with technology now playing a part in all aspects of everyday life, there are far more opportunities to get involved.

"You can work with your passions, take something you are interested in and add computer science to it. I just want girls to know it’s an option."

And it’s an option which can bring many rewards.

She has been a Google Student Ambassador for two years, attending retreats in Sydney, and has received a scholarship to attend the world’s largest conference for women in IT, the Grace Hopper Celebration of Women in Computing, being held in Texas in October.

She has also been awarded a Summer Research Scholarship to carry out a literature review of research into women in computing.

Following that she hopes to develop code camps aimed solely at girls.

She says receiving the scholarships provides validation of her skills, which is important as it can still be tough for women to gain respect in IT.

"There is still a lot of bias and women are not taken seriously," she says.

"Girls tend to sit back and watch a bit more. And women tend to undervalue themselves. Things are a lot more visual now and that might appeal more to girls, and girls bring a different point of view, so it’s good to get that range of opinion."

Find more about computer science study options at Waikato here: cs.waikato.ac.nz

Interactive displays popular at design show

Visitors flocked to the interactive displays at this year’s Bachelor of Computer Graphic Design show hosted at the University of Waikato last month.

The exhibition featured over 30 projects produced by third-year Bachelor of Computer Graphic Design students and ran from 19–21 October.

Each project on display represented a major piece of work designed and produced by students in the final year of their degree. The works were designed to address a diverse range of identified problems and goals using a variety of media. Many of the projects were interactive and computer-based, which proved popular with visitors and professionals.

A third-year student team, consisting of Paul Maguire and Josh Herbes, showcased their joint project RealExperience. Paul says the project as an interactive display designed to provide the user with an immersive experience.

"It sheds light on one of the fastest growing board sports in the sports industry through an interactive and immersive digital medium," says Paul.

Course lecturer Simon Laing says the projects are a great way for students to showcase their work for a professional audience, and help to build on the real-world skills taught in the degree.

"It was very encouraging to see our local industry experts were very receptive to the works on show, particularly with students being invited to job interviews based on the work they displayed."


**Student receives St John’s highest award**

Years of hard work and commitment to St John has paid off for a University of Waikato Biotechnology student.

Courtney-Ruth Gill, Youth leader with the St John’s Hamilton youth division, was awarded the Grand Prior badge at Government House on Saturday 15 August 2015.

Presented by the Prior of St John in New Zealand, The Governor General, the Grand Prior’s Award is the ultimate award for St John Cadets to obtain.

“Presentation of the award is very special as it’s the highest award, other than for bravery, St John can bestow on its cadets,” says Courtney.

Courtney’s leadership potential was recognized in 2011 and she was promoted to Cadet Corporal. She has been actively involved in the division assisting in a leadership role and completed all the requirements of the Grand Prior Award in 2014.

In addition to the six compulsory subjects, Courtney has achieve elective badges including Faith; Road Safety; Home Technology; Environment; Hauora and Leadership.

The main curriculum of the cadet programme is the Grand Prior’s Award where cadets set goals and achieve in a variety of areas. There are 27 subjects available, 6 of them being compulsory.

The programme provides many wholesome topics for cadets to choose from say Courtney.

“Although the award is a real challenge, it’s really rewarding and is something I think all young people should aspire to obtain,”

“I’m really grateful for the support from St John. They gave me the courage and confidence to be able to go to university and achieve my dreams.”

Courtney says she has met some lifelong friends through St John and continues to assist her division every week.

“I am helping the Hamilton Youth Division as a Leader by teaching the curriculum. This will give other young people the material needed to achieve this same award as I did. I would love for other young people to get the same confidence, support and success that I have received through St John”

Courtney is currently in her third year completing a Bachelor of Science (Technology) majoring in biotechnology and will graduate at the end of next year.

**Computer science lab invasion**

R Block’s Lab 5 at the University of Waikato was taken over by an army of blue uniforms as Maeroa Intermediate students took part in two computer Game Maker training.

R Block’s Lab 5 at the University of Waikato was taken over by an army of blue uniforms as Maeroa Intermediate students took part in two computer Game Maker training sessions earlier this week.

Maeroa Intermediate senior teacher in charge of differentiated learning Colin Metcalfe says it’s the first time the school has taken part in computer programming workshops at the university.

“It’s a unique opportunity to get the kids out to test the waters. Quite a few of our students are quite keen on gaming so to be able to bring them in to meet university lecturers and acquire new skills is amazing.”

Computer Science senior tutor Nilesh Kanji ran the workshops and says they play an important role in developing the early computer science skills of students.

“It has been absolutely awesome,” he says.

“I really enjoyed it. The students were very enthusiastic and had a lot of fun. I was quite impressed at the level of skill and understanding a lot of these intermediate students possessed.”

In the workshops, Mr Kanji took students through the steps involved in creating a Space Invaders-type game using the visual environment in the Game Maker software. The students learnt how to create the various game objects and how to make them respond to the player’s actions during the game. By the end of the session, the students had learnt many of the mechanics involved in creating games in the Game Maker environment.

Mr Kanji also runs weekly workshops with an IT Girls Club created by Waikato Diocesan School for Girls.

“Some of the girls have extended their games in their own time from what was described in the lessons. I was learning off them, and that is the real buzz from my point of view,” says Mr Kanji.

The idea for the club was sparked when former Waikato Diocesan School for Girls student Jojo Stewart and the Google Student Ambassador made a visit to a school assembly in 2014 to speak about their study experiences.

Moving forward, Nilesh would like to offer other schools the opportunity to come to the university to do the workshops in the university environment.

“I really think there is no better time for students to learn basic computer science than in this day and age,” says Mr Kanji.

Would you like to be part of a Game Maker workshop? School teachers can contact Nilesh Kanji to discuss the possibilities.

Email: cms@waikato.ac.nz
As part of a third-year mechanical engineering design paper, teams of students were each asked to create a prototype that could autonomously collect and eject five cylinders, each weighing 53 grams.

The inventions were tested at the Carter Holt Harvey Pulp & Paper Engineering Design Show that ran from 19-21 October.

The winners on the day were Hamish Carter, Nathan Senior, Tyler Kleinfelter and Josh Parkin with their vehicle named Murray, which stood out for its speed and accuracy.

“We think our success was down to consistent testing. The day before the test we identified something wrong and were able to iron out the issues for when it really mattered” says team member Hamish Carter.

Course lecturer Associate Professor Mike Duke says the project is a great way for the students to work on something from start to finish. “It’s their first chance to experience the development of a functioning machine from concept, to design and build.”

The event was sponsored by Carter Holt Harvey Pulp & Paper, PDV Consultants, IPENZ Waikato/ BOP Branch, the University of Waikato’s School of Engineering, SENZ (the student division of IPENZ), Tetra Pak, Gallagher Group, MEG (Mechanical Engineering Group), Beca, LP Solutions, Cytonome, Evonik, Fonterra and Coupland’s Bakeries.

Kate Mauriohooho has been awarded two PhD scholarships, which will take her to the big mountains on the Central Plateau.

Kate Mauriohooho is nuts about rocks. She’s just graduated at the University of Waikato with a Master of Science with first class honours and is embarking on a PhD.

Kate is especially interested in the changing nature of rocks and has been trialling sophisticated methods, traditionally used for mining, to characterise rocks in geothermal areas.

“It’s been so exciting applying geochemistry in this way,” she says. “Whereas once you needed to take rocks back to the lab for trace element analysis, we’ve been able to test newer, portable, advanced technology.”

She says she wouldn’t have been able to do the research without her supervisor at the University of Waikato, Dr Shaun Barker.

“He suggested the same techniques used in the mining industry could be applied in geothermal fields and that’s what we did, with good results,” Kate says.

While it’s early days in her PhD study, there’s plenty of interest in Kate’s work. She had support from GNS, Contact Energy and an iwi trust during her masters study.

Kate has two PhD scholarships – a Waikato University Doctoral Scholarship, which gives her $22,000 a year plus course fees, and most recently the university awarded her a Top Achiever Scholarship of $5000.

Up the mountain we go

Innovative engineering design at it’s best

Collecting aluminium cylinders is about to get a whole lot easier thanks to a class of engineering students from the University of Waikato.
Making you aware of how data can be used to influence your decision-making.

Career options include:
- Biometrics
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For more information phone 0800 WAIKATO or visit cms.waikato.ac.nz
Students have a blast at summer school field trip

At the Hill Laboratories Science & Engineering Summer School field trip students explored science and engineering aspects of the Rotorua-Taupo volcanic region.

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