GATEWAYS INTERNATIONAL

will be holding workshops for gifted and talented children

attending International Schools in Bangkok

to be hosted by Bangkok Patana School
643 La Salle Road, Bangna,
Bangkok 10260,
Thailand.

5 and 6 February 2019

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Contact: info@gatewayseducationinternational.com

AN INTRODUCTION TO G.A.T.E.WAYS and G.A.T.E.WAYS EDUCATION INTERNATIONAL

The G.A.T.E.WAYS Organisation

G.A.T.E.WAYS (Gifted and Talented Education) was established in 1994 in Melbourne, Australia, to provide opportunities for highly able and gifted children with special educational needs. Like-minded students can participate in programs that will challenge them intellectually and help develop their individual talents. Over the last 25 years G.A.T.E.WAYS has gained considerable recognition with teachers, parents and children in Australia for its high quality programs.

The G.A.T.E.WAYS Philosophy

G.A.T.E.WAYS believes that, as gifted and talented children are able to learn more quickly and can comfortably cope with instruction at a more advanced level than their chronological age peers, they should have access to programs that are qualitatively different from those provided in the regular classroom. They also need opportunities to mix with like-minded peers and to form rewarding friendships that further foster their interests, social skills and self-esteem.

G.A.T.E.WAYS Education International

G.A.T.E.WAYS Education International was formed in 2012 with the aim of extending G.A.T.E.WAYS programs to include students attending International Schools in countries other than Australia. An inaugural program was held in Thailand at Bangkok Prep on 1 and 2 October 2012. In February 2013, G.A.T.E.WAYS ran workshops at AIS in Singapore and at Bangkok Patana School in Thailand. Further workshops were held in September 2013 at Bangkok Patana, in September 2015 at NIST International, and in February 2016 again at Bangkok Patana. The last International workshops were held at NIST International School in October 2017. We are excited to be returning once again to Bangkok Patana in February 2019. The theme for these workshops is *Solve It!*, providing challenge and extension in areas across the curriculum.

Hosting G.A.T.E.WAYS Education International Programs

G.A.T.E.WAYS appreciates the support of its host schools. A big thank you to NIST on this occasion. Schools interested in hosting should contact info@gatewayseducationinternational.com A Host School Pack is available on request.

Selection for Program

Teachers from all International Schools in Bangkok are invited to select and register highly able children who are fluent English speakers and who have abilities and interests in advance of their age peers. There will be workshops in creative writing, critical and creative thinking, philosophy, public speaking, forensic science, chemistry, physics, maths and computer technology. Selected participants should display curiosity, be creative and lateral thinkers, and enjoy the challenge of solving problems. Each workshop will be limited to 20 students, so it is important to register early to avoid disappointment. Children may be selected for one or both days. Selection criteria for teachers are included later.

Cost of Programs

As G.A.T.E.WAYS Education International is an independent organisation and has no funding, parents or schools pay a fee for their students to attend programs. From this fee, G.A.T.E.WAYS pays all costs associated with the programs. The fee for the current program is AU$195.00 a day or AU$390.00 for the two days.

G.A.T.E.WAYS Presenters

G.A.T.E.WAYS engages presenters who are expert in a given field or fields; passionate about their field and able to convey this enthusiasm to children; excellent communicators who love children; knowledgeable about the special needs of gifted children and how they learn; creative, flexible and skilled in terms of curriculum development and delivery. Their programs are inquiry based, with hands-on activities, problem solving and higher order thinking skills. They are also excited to be travelling to Thailand to present their workshops to International students. G.A.T.E.WAYS is looking forward to engaging Thailand based presenters with special interests, passions and expertise to run future programs at International Schools in Thailand. Please contact info@gatewayseducationinternational.com

Meet the G.A.T.E.WAYS Education International Team for the February 2019 Workshops

Allen Dickson is an educator and speaker with a passion for ensuring learning is innovative, practical and enjoyable. For over 20 years he has combined classroom teaching with appointments in various extra-curricular organisations where he uses a diverse range of skills to instil confidence, extend abilities and initiate change in classrooms. A regular presenter with G.A.T.E.WAYS since 2012, Allen also runs his own educational consultancy – RethinkPD – where he speaks on a range of specialist issues in literacy, numeracy, thinking curricula, extension and enrichment, both in schools and at conferences around Australia.

Beth Cregan, a teacher with 25 years' experience, combined her passion for creativity and language to launch 'Write Away With Me', an organisation dedicated to inspiring students and teachers alike to discover their unique power as writers, narrators and creative thinkers. Beth presents engaging writing workshops for schools and organisations in Australia and internationally as well as running popular literary events across Melbourne, including The Writer's Club. Beth's high energy, fast paced writing workshops motivate writers to see and use language in fresh and innovative ways. Her passion for language and her keen sense of fun will have you reaching for your pen, long after the workshop is over.

Colin Chapman brings an international education perspective to his G.A.T.E.WAYS program offerings. During his 4 years of teaching the Mathematics, Physics and Chemistry courses for the International Baccalaureate Diploma in Switzerland, he was awarded the 10K Euro Google RISE Award for his development and implementation of the Grlbotics Robotics program. Most recently he set up a Systems Engineering Centre at a Melbourne school, taking responsibility for Robotics and Physical Computing Education. In addition he is the Victorian State Reviewer of Systems Engineering study. He continues to engage emerging engineers, mathematicians and roboticists through the development of multidisciplinary programs that challenge students from the early years to pre-University.

Jane Godwin is a publisher and highly acclaimed author of over twenty-five books for children. Her work is published internationally and she has received many commendations and awards. Jane is the creator of *Our Australian Girl,* a highly successful series of quality historical fiction for middle year readers. Much of Jane's time is spent in encouraging and supporting authors. She believes that children have a natural curiosity when it comes to language, and she enjoys working with young people, running various literature and writing programs at festivals both in Australia and internationally, and encouraging students in their own creative ventures.

Narelle Wood is a teacher, educator and researcher at Monash University, Melbourne. She has ran numerous science, maths and literature workshops for primary and secondary students, as well as teachers throughout Australia and overseas. Her background in science includes genetics and chemistry, as well as teaching secondary school science. While a lot of her time is taken up training the next generation of teachers, she loves getting back into the classroom, especially to run creative science and maths programs that encourage students to develop curiousity and help foster their passion and interest in a range of science areas. Currently Narelle is completing her PhD in education.

Ron Thomas knows the fun of public speaking and the joy of moving an audience. He is director and facilitator of 'Speak with Power' and has twenty-five years' experience training primary and secondary students in public speaking, leadership and debating skills. A Gold Level Toastmaster and Area Humorous Speaking Champion, Ron loves public speaking. He has twice coached student teams to the Debating Association of Victoria Grand Final (Australia). He was Gifted and Talented Students Coordinator at his last school. He trains teachers Australia-wide in teaching Drama, Debating and Public Speaking. Ron is also a published poet and author of a text book, 'Engaging Students in Drama'.

Simon Matheson is a physicist by training and has been involved in education one way or another for most of his life; first as a student, then as a secondary school science and maths teacher, and most recently as a developer and presenter of science outreach programs with CSIRO Education in Australia. Simon's enthusiasm for science education is grounded in the belief that all citizens of the modern world need a firm grasp of the principles upon which science (and, by extension, the world around us) are built.

Stephanie Axon has been a secondary school teacher for many years and has a passion for education. As well as being a classroom teacher she has held various positions of leadership including Head of the Science and Information Systems and Technology Faculty at a large independent school in the eastern suburbs of Melbourne. She began presenting workshops for G.A.T.E.WAYS in 2013 and her dynamic and innovative workshops are always extremely well received, and provide many opportunities to encourage and foster the inquiring minds of children. She loves all things Science and Maths and relishes the opportunity to empower children and share her enthusiasm and love of learning. At the start of 2015, Steph joined the G.A.T.E.WAYS team as a Program Coordinator – a role she is enjoying immensely. Steph has recently completed studies in Gifted Education with high distinctions.

Win Smith will be accompanying the team to Bangkok. She is a founding director of G.A.T.E.WAYS, established in 1994 in Melbourne Australia. Win retired in June 30, 2016, from the main arm of G.A.T.E.WAYS, and now concentrates on running G.A.T.E.WAYS Education International and G.A.T.E.WAYS Publications. She loves to travel, which is just as well, as her two sons and four grandchildren live overseas. In her 'spare time', Win has taken up oil painting and is learning to play Bridge.

G.A.T.E.WAYS EDUCATION INTERNATIONAL at Bangkok Patana

5 and 6 February 2019

BANGKOK FESTIVAL OF WORKSHOPS

SOLVE IT!

Year Levels	Tuesday 5 February 2019 Registration – 8.00am Morning break: 9.45am – 10.00am Lunch: 11.00am – 11.45am Afternoon break: 1.00pm – 1.15pm Finish: 2.15pm		Wednesday 6 February 2019 Registration – 8.00am Morning break: 9.45am – 10.00am Lunch: 11.00am – 11.45am Afternoon break: 1.00pm – 1.15pm Finish: 2.15pm	
	8.30 – 11.00	**11.45 – 2.15**	**8.30 – 11.00**	**11.45 – 2.15**
Years 1 / 2 Program 1	SCIENCE PROBLEM SOLVING *The Whirly, Twirly Science Lab* Narelle Wood	CRITICAL /CREATIVE THINKING *The Philosopher's Tea Party* Beth Cregan	SCIENCE PROBLEM SOLVING *Why Is My Head Spinning?* Stephanie Axon	MATHS PROBLEM SOLVING *Maths Monster Mayhem!* Allen Dickson
OR Program 2	CRITICAL /CREATIVE THINKING *The Philosopher's Tea Party* Beth Cregan	SCIENCE PROBLEM SOLVING *The Whirly, Twirly Science Lab* Narelle Wood	MATHS PROBLEM SOLVING *Maths Monster Mayhem!* Allen Dickson	SCIENCE PROBLEM SOLVING *Why Is My Head Spinning?* Stephanie Axon
Years 3 / 4 Program 3	SCIENCE PROBLEM SOLVING *The Great Exploding Egg Challenge* Simon Matheson	CHEMISTRY *Einstein Is In My Pantry!* Allen Dickson	CREATIVE WRITING *It's Outrageous!* Jane Godwin	PHILOSOPHICAL ENQUIRY *Knock, Knock!* *Plato Is At My Door!* Beth Cregan
OR Program 4	CHEMISTRY *Einstein Is In My Pantry!* Allen Dickson	SCIENCE PROBLEM SOLVING *The Great Exploding Egg Challenge* Simon Matheson	PHILOSOPHICAL ENQUIRY *Knock, Knock!* *Plato Is At My Door!* Beth Cregan	CREATIVE WRITING *It's Outrageous!* Jane Godwin
Years 5 / 6 Program 5	CHEMISTRY *Spellbinding Science – The Magic of Hogwarts* Stephanie Axon		PUBLIC SPEAKING *Say It With Sizzle* Ron Thomas	
OR Program 6	CREATIVE WRITING *Master Class* Jane Godwin		GENETIC SCIENCE *Is There A Woolly Mammoth Loose On Platforms 5 and 6?* Narelle Wood	
Years 7 / 8 Program 7	MATHS/COMPUTER TECHNOLOGY *Games Among The Toroids* Colin Chapman		SCIENCE/MATHS PROBLEM SOLVING *The Great Balthazar's Amazing Bag of Tricks* Simon Matheson	
OR Program 8	PUBLIC SPEAKING *Speak With Power* Ron Thomas		SCIENCE/TECHNOLOGY *Can Citizen Science Save The World?* Colin Chapman	

Workshops will introduce new knowledge, develop new skills, and present challenging problems to be solved.

Children may attend on one or two days.
They cannot mix and match workshops from different programs on the same day.
The fee is $195.00(AU) for each day.
There will be a maximum of 20 children in each workshop.

WORKSHOPS FOR YEARS 1 AND 2

'The Whirly, Twirly Science Lab' with Narelle Wood

Deep in the jungles of Madagascar, a group of scientists has found a tree whose sap contains a chemical that gives people the power to read minds. The sap also contains a chemical that causes people to fall asleep. Both are very useful chemicals by themselves, but not so useful when taken together. The scientists need to separate out the two chemicals. However, the machines that would do this run on electricity, which is hard to find in the jungle. They've tried taking the trees and tree sap to the lab, but they've discovered they don't travel so well. What are they to do? Does the solution lie in some string, paper, a piece of wood and a plastic bag? Let's explore different ways of making centrifuges, and the science behind these whirly, twirly devices, to see if you can help the scientists find a solution to separate the sap.

Teacher Notes: During this workshop, participants will be exploring the use of centripetal forces and centrifugal momentum in a variety of scientific lab equipment used to separate out the different types of liquids. They will compare the spinning speeds of the hand whirly twirlies with electronic centrifuges by calculating rotations per minute. Other types of separation methods, such as chromatography, will also be used. Participants will make their own whirly twirly centrifuge in order to separate liquids. These can be taken home so that the children can repeat the experiments with friends and family.

'The Philosopher's Tea Party' with Beth Cregan

Take your seat at the Philosopher's Tea Party and get ready to test the limits of your creative thinking. Aristotle, an ancient philosopher, is coming too. He'll help you pose questions and play with ideas as you wrestle with some of life's big questions. Through discussion, storytelling, literature and writing, we'll get creative and untangle Aristotle's theory of truth and reality. Do we all see the world in the same way? Now that's a question worth asking!

Teacher Notes: This workshop is designed to develop critical and creative thinking skills. Both sides of the brain get a workout here! The characters we meet in stories and in picture books will stimulate active discussion, an essential component of this workshop, and help make philosophical theories accessible to young philosophers. Creative mediums such as art, music, literature and writing will allow us to both communicate and express our ideas. But 'thinking about ideas' falls flat if the children can't make use of what they learn in their everyday lives. Our activities will encourage children not only to reflect on ideas, but also to learn to apply them to their own lives.

'Why Is My Head Spinning?' with Stephanie Axon

Have you ever wondered why we feel dizzy when we spin? Or how we know precisely what position our body is in, even when our eyes are closed? If these questions have your head in a spin, this workshop is bound to provide a cure! We will delve into the anatomy and physiology of the ear, and explore the relationship between the ear and the brain, in order to unlock the mysteries of this amazing sensory organ. We will conduct hands-on experiments to test the validity of various theories and discover the amazing synergy between organs that enable us to maintain our balance. You're sure to 'spin out' on some of the amazing facts covered in this perfectly 'balanced' workshop!

Teacher Notes: During this workshop children will investigate the relationship between organs that allows us to maintain balance. We will explore the anatomy and physiology of the ear with a focus on the vestibular system. We will conduct a number of experiments to test the validity of the information provided and demonstrate the concepts taught. Highly able children will benefit from the opportunity to advance their skills in scientific testing and thinking. They will also develop skills to analyse and interpret the information and data presented.

'Maths Monster Mayhem' with Allen Dickson

The maths monsters are lurking everywhere! There's a 'More-Or-Less Monster' hiding in your lunchbox, a 'Multiplication Monster' in the bin, a 'Plus-n-Minus Monster' under the mat and a 'Measurement Monster' behind the sticky tape dispenser. As fearless maths monster hunters, first we must trap the monster, then we must discover what that monster means… and finally we must feed the monster its mathematical meal. And as we do, we will learn all about the monsters' world of 'Oddition' – a place where the maths is all about Ambition (Addition), Distraction (Subtraction), Uglification (Multiplication) and Derision (Division).

Teacher Notes: 'Maths Monster Mayhem' applies a specific monster to each of the mathematical operations in order to create a whole imagined world of 'hidden maths'. From the 'Greater Thanicus' and 'Lesser Thanicus' having a Maths Monster Munch, through to Directed Numbers with the 'Plus-n-minus Hopenupendown', the students will be given little glimpses of a world that demonstrates how each symbol functions – and just as importantly, how they relate to each other. They will learn the weird monster number system of Oddition and how this uses 'Proof by Comparison' to help us understand our own digits.

WORKSHOPS FOR YEARS 3 AND 4

'The Great Exploding Egg Challenge' with Simon Matheson

The clock is ticking. Disaster threatens. That notorious bad egg, Despicable Dumpty, evil twin of Humpty, has planted four deadly egg bombs in the barracks where all the king's horses and all the king's men sleep. The bombs are guarded by a series of fiendish puzzles that perhaps only you can solve. Welcome to a brain-bending, mind-twisting race to save the king's cavalry that will test your creativity and ingenuity to the limits (and maybe beyond). You will be asked to solve puzzles of all sorts – maths puzzles, science puzzles, physical puzzles and logic puzzles. You will need to put on your thinking caps and practise your communication skills as you work both individually and in groups to first reach the egg bombs, and then disable them. Do you have what it takes to solve the puzzle, and save the day?

Teacher Notes: This session provides team-based and individual hands-on activities that enhance outside-the-box creative thinking. The activities are designed to be inquiry-based, and to allow for exploration of problems and solutions. Some of them encourage work in a self-paced mode, and others promote group cooperation, thinking and discussions. Participants are encouraged to find multiple, imaginative, intuitive and common-sense solutions and not 'one right answer'. Each activity will help to develop specific problem-solving techniques that will be required to solve the final puzzle - and help to avert a terrible disaster!

'Einstein Is In My Pantry!' with Allen Dickson

Bernie Bunsen had the weirdest dream last night. He dreamt that Albert Einstein, Sir Isaac Newton, Louis Pasteur and a whole gaggle of other famous scientists were conducting experiments… in his pantry! Imagine his surprise when he went downstairs for breakfast, reached his hand into the pantry to get the cornflakes and pulled out a half-written experiment by Marie Curie! When Bernie looked closer he could see that all of the scientists had been experimenting – Pasteur's prints were on the Cream of Tartar, Galileo had spilled the bi-carb, and what was Isaac Newton doing with the cornflour? Using only the ingredients that you can find in your pantry, can you help Bernie complete the experiments and discover what each scientist was looking for?

Teacher Notes: Bernie Bunsen's discoveries in his pantry will guide the students through four specific areas of science and introduce them to some great minds that made key discoveries:

- Albert Einstein – Light and Refraction
- Louis Pasteur – Fermentation
- Daniel Bernoulli – Thermodynamics
- Linus Pauling – Proteins, Sugars and DNA

Along the way they will also have to solve a mystery about another scientist who has been trying to sabotage each experiment. It will be a hands-on, fun and memorable journey through experiments that participants can go home and replicate with common ingredients they probably have in their pantry at home.

'It's Outrageous!' with Jane Godwin

What do Miss Trunchball, Cinderella's stepsisters and the Jabberwocky have in common? They are all outrageous characters!
In this workshop, we'll be looking at tall tales and unbelievable yarns, and some famous outrageous and unusual characters from books. Then we'll let our imaginations and powers of exaggeration run wild, and think up the most outrageous characters we can! We'll use these characters to create new and unbelievable stories of our own. If you enjoy writing stories, playing creative games, and funny ideas, then this is the workshop for you. Could *you* invent an outrageous character? One that is only *just* believable?

Teacher Notes: Participants will explore new, fun and surprising approaches to creating characters, and practise looking at all aspects of character, including how to make a character feel original, authentic, consistent and compelling – even if that character is also outrageous! We will look at how other authors have created memorable characters, and we'll practise creating multi-faceted characters of our own. We will utilise creative-thinking skills, strategy and problem solving, and writing and language skills. Students will gain an understanding of the importance of character in fiction and how developing their characters further will in turn help them enhance plot and action in their story. Character and plot are interconnected, and we'll look into how and why this is so. Participants will be given strategies for character development they will then be able to adopt and take further when writing narratives in the future.

'Knock, Knock! Plato Is At My Door" with Beth Cregan

An old leather satchel from 'The Academy' in ancient Athens has arrived at our door. Ahh... it belongs to Plato, one of the great philosophers of our time and founder of the first ever school. So in the true spirit of early education, we'll gather round and listen to one of Plato's stories, '*The Ring Of Gyre*.' What would you do if you found a ring that had the power to make you invisible? Is Plato right? Do we do the 'right' thing because we're scared of getting caught and punished? Through an active process of philosophical discussion and critical thinking, we'll reflect on this famous story. Then it's time to sink into our imaginations and explore this concept through creative writing. What will your character do with this ring?

Teacher Notes: Storytelling and creative writing are a great way to introduce children to the challenge of philosophical enquiry. Through an active process of discussion and reflection, we'll explore and untangle some of the very same questions that Plato wrestled with back in 300BC. This program encourages young philosophers to be independent and creative thinkers as they reflect on their ideas and beliefs. We'll use creative writing to express our response to the story. In a piece of fiction, we can suspend judgement and let our characters play with difficult thoughts and perceptions.

WORKSHOPS FOR YEARS 5 AND 6 – these are full day workshops

'Spellbinding Science And The Magic Of Hogwarts' with Stephanie Axon

The acclaimed Harry Potter series has captured the imagination of millions of readers worldwide, but behind the story are pages brimming with serious chemistry that bubbles, pops and sparkles. This workshop will look behind the flash and bang of the magic at Hogwarts, taking what is essentially fantasy and connecting it to real life. Join us as we delve into the magic performed by Harry, Hermione and Ron and then, as Muggle chemists, we will explore this magical realm and unravel the science behind some of the most intriguing wizardly effects found in the pages of the Harry Potter books. An understanding of some important chemistry should arm us with all that is required to reproduce some spectacular Hogwart's magic of our own – no wands or incantations necessary!

Teacher Notes: This workshop is designed to engage students with an interest in science and a fascination for the wizardly effects found in the pages of the Harry Potter books. It uses the popular series as a platform to make scientific connections between fantasy and real world chemistry. Students will investigate a range of scientific concepts as they aim to reproduce some of the magic that is commonplace in Harry Potter's world. Topics covered include atomic structure, polymers, hydrophilic and hydrophobic substances, osmosis, pH testing and flame tests. Participants will discover that 'magic' can happen in labs and in classrooms, and is not just confined to Harry Potter's world!

'Master Class' with Jane Godwin

If you're serious about story writing, this workshop will give you the strategies and techniques to take your work to the next level. We'll explore different and exciting ways of developing an idea, and try methods you may not have considered before. Some writers love planning and some find it stifling – everyone has a unique approach, and no one way is correct or incorrect. We'll look at some different techniques and decide which one might suit you best. We'll experiment with story shape and structure, and look at the themes that appear in our writing. We'll play games with language that will help us write in a more original way, and we'll create some wonderful - and hideous - characters. It's everything you need to improve your writing ability!

Teacher Notes: In her role as a publisher, Jane has worked with countless authors helping them to improve their stories, so she understands the idiosyncrasies of individual writers! Students will be encouraged to look at the mechanics of their writing in order to understand the process more thoroughly and therefore spot weaknesses in their work, and know how to fix them. Often highly able writers don't approach creative writing in a straightforward way – this workshop helps them to unpack and examine their individual approach so that they feel equipped and confident to take their writing to the next level. As well as exercising their imaginations, students will engage in creative-thinking skills, strategic analysis and critical thinking, and writing and language skills.

'Say It With Sizzle' with Ron Thomas

Public speaking is far from scary – with the right tips, it is downright fun!! In this program you'll learn how to plan and write a speech that has impact; how to deliver a speech that will connect with - and move – many audiences; how to overcome nerves; how to memorise your speech; how to use your voice like an instrument and how to speak 'off the cuff'. You'll master key tactics such as a humorous opening, a strong conclusion and signposting. You will learn how to use audience 'hooks', the 'best words in the best order', persuasive language, and 'showing not telling', all of which will make your speech sizzle. Activities such as 'Yes Let's' and 'Word at A Time Story' will help you beat self-consciousness and build confidence**.** Your new-found confidence and skill will enable you to feel the excitement of having an audience 'in the palm of your hand'. Get ready to blow them away!

Teacher Notes: Strong communication skills are a leader's best asset. In this workshop participants will discover the power of being able to communicate exactly what they mean. Through drama activities and oral skills training, this workshop will have participants using advanced presentation skills: a winning voice; appropriate gestures; expressive body language; strategic use of the space and audience; and tips to develop confidence and flair. They will learn non-verbal skills to enhance their delivery: breathing, gestures, body language and purposeful movement will enhance your deliveries. The workshop will give them the techniques to create a great speech, run a successful meeting and be a vibrant Master of Ceremonies. But most of all, it will replace 'scary' with fun!

'Is There A Woolly Mammoth Loose On Platforms 5 and 6? ' with Narelle Wood

Trains on the New York subway have ground to a halt as scientists reveal that they have discovered evidence of woolly mammoth DNA on two of the platforms. While there haven't been any sightings, several train drivers have reported some strange goings on. As part of the Woolly Mammoth Detection Team, you are armed with your DNA extraction and analysis kit, and it's your job to find the DNA, extract it, analyse it, and follow the trail to see if you can confirm or deny the presence of the woolly mammoth in the subway. What other evidence can you collect along the way? Where might the woolly mammoth be hiding? And if it's not a woolly mammoth, how did the DNA get into the New York subway?

Teacher's notes: This workshop is designed to develop participants' understanding of the structure and function of DNA by making models of various DNA molecules and exploring the relationship between DNA, genes and their various functions in the human body. We will investigate methods of DNA collection, including investigating how easy it is for samples to become contaminated. We will also do our very own DNA extraction and look at how some specialised scientific equipment is able to read and decode the genetic code for us. Finally, we will use our problem solving and critical thinking skills to analyse our findings to see whether or not there is actually a woolly mammoth loose on Platforms 5 and 6.

WORKSHOPS FOR YEARS 7 AND 8 – these are full day workshops

'Games Among The Toroids' with Colin Chapman

Board games that are played on a flat plane are familiar to us. This workshop investigates the mathematics of Stewart Toroids, knowledge of which will enable us to create our own game universes that challenge the rules of a range of traditional board games. How might we be able to change the rules of chess in a toroidal universe? The board games that we will adapt to our worlds may include Chess, Checkers, Noughts and Crosses (Tic Tac Toe), and Snakes and Ladders. We will create the three-dimensional toroidal boards from templates.

Teacher Notes: This challenging maths workshop will investigate the rule possibilities available to us when the same games are played on non-standard surfaces. Such surface may include cylinders, where the board game circles in on itself, and spheres and Stewart toroids, where pieces may disappear from a surface through a hole in the solid, to reappear on the interior of the object. Mobius strips and other constructions will also be considered.

'Speak With Power' with Ron Thomas

Do you have strong feelings about issues? Would you like to change the world? Can you see a future for yourself in politics down the track? If your answer to these questions is yes, or even just maybe, then what skills do you need to make this happen? The ability to write and deliver great speeches is one of the hallmarks of a leader. In this workshop you will be given the tools to get started: the prerequisites of persuasion, dazzling rhetorical tactics and how to use persuasive language brilliantly. You'll find out how to write a speech that satisfies and is convincing. You will learn how to use your body, your expression and your delivery to turn a great written speech into powerful presentation that will knock the socks off your audience. Can we save the planet? What should we do about refugees? Does the world need younger leaders? What matters most? Let's hear your voice!!

Teacher Notes: This workshop is developed and run by Ron Thomas, Gold Level Toastmaster and Australia-wide teacher trainer in debating and public speaking. In his role as a speaker, Ron has worked with countless students and adults, helping them to improve their speaking, so he understands how to inspire individual talent! Participants will be given the tools to write a convincing speech, deliver a powerful oration and to utilise strong rhetoric. They will access the science of persuasion, utilise critical thinking, and develop advanced writing and language skills.

'Balthazar's Amazing Bag Of Tricks' with Simon Matheson

Roll up! Roll up! Behold the most puissant of magicians, The Great Balthazar! Prepare to be amazed, nay, dazzled, by four of his most wondrous magic tricks. *Watch as Balthazar* makes a glass tube vanish before your very eyes or turns a simple steel ball into a deadly missile with a wave of his wand. The Great Balthazar will claim to have turned the tube invisible. But is invisibility *really* possible? Or is there more to this trick than meets the eye. Ask yourself, can you tell the difference between a magic trick and a scientific principle? Magicians have been amazing audiences for centuries with new 'tricks' employing scientific ideas in a non-conventional manner. Although a magician never reveals his secrets, the whole point of being a scientist is to explain ideas. *Balthazar's Amazing Bag of Tricks will* take you on a journey into the world of magic to discover firsthand how magicians use science to create some of the most awesome magic tricks. Watch in amazement as science creates magic right before your very eyes. Join us on a journey of discovery and learn how to perform some mind-boggling 'magic' from The Great Balthazar's bag of tricks and reveal the science that makes them possible.

Teacher Notes: This hands-on and interactive workshop is designed to excite, educate, intrigue and promote students to think 'outside the box' and excite their curiosity about how science and the scientific method can be used by magicians to create the seemingly impossible. Students will explore a variety of scientific concepts as they seek the mystery behind the magic and try to unravel just how Balthazar's tricks work. The program will guide students through several demonstrations and hands-on experiments that explore such diverse topics as refraction and total internal reflection, magnetic forces and acceleration, electrostatics, and air pressure.

'Can Citizen Science Save The World?' with Colin Chapman

Citizen Science involves a contribution by the public to scientific research. It requires thoughtful action to advance knowledge. Anyone can contribute! Areas of research include space, climate, humanities, nature and biology. The aim of Citizen Science is to undertake research and discovery, and as an introduction, participants in this workshop will design and build a range of sensors to measure the state of the environment. Using the Arduino microcontroller C++ programming language, participants will learn how to collect data in a fair manner, interpret it, draw conclusions and then communicate their findings. The sensors that we will consider for design will include turbidity, temperature, salinity and acidity.

Join us as we work on ways to make valuable contributions to science!

Teacher Notes: Participants will examine how other Citizen Scientists have acted with the data that they have collected to effect change in their communities. For more information on Citizen Science, and the philosophy behind it, see:
http://theconversation.com/explainer-what-is-citizen-science-16487