Welcome to the 10 Year Anniversary of the Australian Science & Mathematics School. Yes its true; the school opened 10 years ago, 2013. In its first term, the ASMS was held in the Engineering Department at Flinders University while it waited for the new building to be completed. Some of the original staff are still at our school, namely Graeme Oliver, Jayne Heath, Neil (DOC) Davis, Andy Stone, Deb Smith, Thom Burns and Matt (JAMO) Jameison. At the time, Ron Lake was the Director and Lyndall Bain the Principal. They led the team that prepared the program for the first students. Jim Davies, Inaugural Principal of the ASMS joined the school in term 2 2003.

This year we have a number of events for our 10 Year Anniversary starting with our first day assembly held on 29 January. Associate Professor Jim Davies, CEO of Principals Australia, and Professor Michael Barber, Vice Chancellor and President of the Flinders University, addressed the students and about 100 old scholars who attended. You can keep in touch with events through our facebook page https://www.facebook.com/asms.edu and in the next newsletter.

The school opened with 357 students and 7 new staff. Welcome to new teachers Miron Bar-am, Ash Brook, Caroline Dean, Tristan Miller and Christine Taylor, our new Chaplain Ian Davis, and Michele Schultz who joins the support staff team.

You may have read on the website that the 2012 year 12 class has done very well in their SACE. 32% received over 90/100 for their ATAR and another 20% achieved between 80 to 90. 93% were offered courses in STEM (science technology engineering mathematics) in the first round of University offers, with 20 students offered places in engineering at either Flinders or Adelaide University. The DUX of the school was Dexter (Yutaoo) Feng with 98.95. Dexter also got the highest ATAR of all the international students in South Australian government schools.

The focus for 2013 is to develop the innovations that the staff started working on during 2012. Supported by our Governing Council, our goal for 2013 is to extend the innovation of the ASMS to ensure that our courses and opportunities for our students are aligned with the latest knowledge, particularly that related to the digital technology that connects our world. We are looking for way to support students who are interested to truly choose their own adventure through our curriculum. This will include opportunities for students design their own learning paths, assisted by staff to gain accreditation. As you know we already have some students participating in online courses (MOOCs) from USA ivy league universities. Not the least of these innovations is the Innovation Space being developed by a team of ASMS staff led by Dr Sivam Krish. More on that next time.

Susan Hyde
Principal
Understanding reasoning and relationships is a critical skill that empowers students to engage with a future oriented approach to learning. Developing an awareness of the underlying mathematical connections between seemingly unrelated concepts, and proving the validity of these connections, enables students to appreciate the role mathematics plays in our everyday lives.

The mathematics based central study, ‘Reasoning and Relationships’, builds upon this perspective by providing a curriculum rich in the requisite mathematical content for SACE stage 1, stage 2 and beyond, delivered through an open, student directed, peer supported, learning environment. Students actively engage in the Reasoning and Relationships (RAR) program by developing strategies to improve and personalise their approaches to learning, building awareness of their personal thinking styles and preferences, and when stuck (which is a good thing!) using specific interventions to move forward.

Throughout the year students will be given the opportunity to cover the topics of: Functions and Graphs, Probability and Statistics, Trigonometry, Exponents and Logarithms, Quadratics and other Polynomials, and Periodic Functions. Embedded within each of these will be explicit connections to extension concepts giving students the opportunity to deepen their understanding of mathematics. Each topic will be presented in the form of a structured list of Core Mathematical Learning outcomes; a summary of the concepts, facts, and procedures that students are required to learn.

Students will demonstrate their learning through the use of a Learning Journal that is scaffolded and structured using a revised version of Bloom’s taxonomy. In essence the Journal is a record of the student’s engagement in the RAR’s curriculum that demonstrates their level of knowing as it relates to the content being covered. However the true value of the Learning Journal is the student’s running record of how they are learning: analysing the learning strategies they have used, the effectiveness of these strategies, and making personal recommendations for improving themselves for next time.

Mathematical knowledge will be developed during session times through engagement with online resources, learning scaffolds, interventions, text books, peer mentoring and support, teacher instruction, and any other productive means of learning. Students are empowered with a flexible learning space in which all maths teachers are accessible for support and students can approach those they learn best from, attending scheduled or ad-hoc workshops as their learning needs demand. Two group projects will form a significant part of the learning and assessment in RAR this year giving students the opportunity to develop their mathematical reasoning and discover mathematical relationships in real world contexts. The group projects are designed to stimulate student creativity in mathematics and encourage collaboration in learning.

Throughout the year students will be challenged to engage with the fertile question “Reasoning and Relationships: A matter of perspective?” and reflect on how different elements of the course can provoke different perspectives on the notion of mathematical reasoning and/or relationships. Of course there will also be the familiar maths tests running throughout the year although they will have an ASMS flavour to them.

Successful completion of the mathematics based central studies program at the ASMS ensures that students will be adequately prepared to enrol in both Mathematical Studies and Specialist Mathematics at Stage 2. It also ensures students are well prepared for their journey of learning as they begin to engage with their future pathways.

Jason Loke
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A Technological World

In the Central Study Technological World students will investigate social implications of various developments in science and technology, particularly in materials and energy over time. The Fertile Question for Technological World is ‘Why invent?’

Technological World started with a week of immersion activities that included the students building a Rube Goldberg machine, planning to steal a jewel-encrusted sceptre, as well as looking at the role key inventions have had in shaping our society.

While there are many scientific concepts that could be used to explore the development of new products or ideas, the students will focus on two, Energy & Machines and Engineering Materials.

In the module Energy & Machines, students will focus on how our understanding of energy and its transformation has assisted technological development. Students will develop understandings of these principles through extensive practical investigations, with significant opportunities for learning via interactive simulations. The assessment tasks for this module are an investigation into the efficiency of a bow and the preparation and delivery of a presentation that covers an application of the scientific principles covered.

In the Engineering Materials Module students will use the example of materials to investigate how scientific understanding, in this case of the structure of materials, can have significant impacts on society. Students will use a variety of approaches to develop their understandings, which will be assessed the periodic table assignment, where students select from a number of options to demonstrate their learning and a student-designed investigation into corrosion prevention.

The Technohistory module will continue to address the impact of inventions on society, with the highlight being the Technohistory Museum. As part of History Week, students collaboratively present their own Museum-style display of the development of technology linked to the impact these developments had on the wider society. The Technohistory Museum will occur early in term 2, and the display will be open to parents, caregivers, family and the public.

In Technological World, Stage 1 students will be assessed against the SACE Stage 1 English or English as Additional Language/Dialect, History and Scientific Studies frameworks.

Andrew Stone
(Senior Leader, Interdisciplinary Science)
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Sharing your knowledge and expertise....

At the ASMS we recognise that amongst our parents there exists significant knowledge and experience in a wide range of fields of expertise....areas ranging from practical mechanics to theoretical physics. Just as wide is the range of topics that our students choose to investigate for their Year 12 Research Project. In the past topics have ranged from building a cricket bat from scratch to software design to investigating the importance of sleep.

We would like to establish a register of parent expertise so that students can contact the experts that we have ‘in-house’ if a match occurs between their topic and a parent’s expertise. If you would be prepared to be a reference point for a student please enter your details here:

https://docs.google.com/forms/d/e/1FAIpQLSbVW6L9RrQk9Gk_D3lK9WToVWaowBM6xWnw/viewform

Lisa Pope
Research Project Coordinator

CENTRAL STUDIES
Body In Question

What does it mean to be healthy? Are you healthy? How can you become healthier?

The Central Study Body in Question explores these questions, and more by looking at the health of humans, including what it means to be healthy and what we can do to increase health of ourselves and others. The Fertile Question for Body in Question is ‘How can we influence human health?’

We started the Body in Question Central Study with a week of immersion activities that included an overview of the Body in Question, practical investigations, hands-on activities with Flinders University staff and excursions to the Flinders Medical Centre anatomy museum and Flinders University Gym.

In the module Medical Diagnostics students start by exploring what it means ‘to be human’ by looking at our senses and the role they play in cognitive processes we often take for granted. The scientific principals behind our senses will be investigated, with a particular focus on the concept of light and sound waves. Student will design and carry out a practical investigation to attempt to answer research questions such as: What is the effect of age on frequency humans can hear?, What is the effect of sunscreen on UV light transmission?, or What is the effect of frequency on human hearing? The wider applications of these key principals will be addressed through students designing a learning object to present to the class and share on-line.

During the Medical Diagnostics module students will start to answer the Fertile Question, ‘How can we influence human health?’, by working through a collaborative problem-based-learning experience across the while semester where they not only design an action plan to improve human health, but perform it as well and then present findings to their class. This will be a particular focus of Week 5 this term, where students spend a whole week investigated the historical context of their selected health issue. The area of health in which students want to focus is their choice, giving the opportunity for students to work in their area of interest or passion.

In each of these Health modules students will conduct collaborative practical investigations and complete assignments. This year the topics are (1) Immunology, looking at disease and the human immune system, (2) Physiology, looking at the anatomy of the human body with a focus on systems responsible for movement, (3) Social health, looking at the positive and negative way humans interact in groups (4) Emotional Health, looking at emotions and their role in human health and (5) Nutrition, looking at the role of nutrients in the human body as well as the human digestive system.

In Body in Question, Stage 1 students will be assessed against the SACE Stage 1 English or English as Additional Language/Dialect, History and Scientific Studies curriculum statements.

Andrew Stone
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Sleep, study skills and exercise...a recipe for Year 12 success.

Year 12 is a landmark year in the lives of many; it marks the end of school based education for most students and presents many with some of the biggest challenges that they have had to overcome.

At the ASMS teaching staff have long known that what happens in the classroom is only one ingredient of the recipe for year 12 success and that it is essential that students also include in their personal recipe for year 12 things such as good sleep patterns, healthy eating, regular exercise and personal organisation.

The ASMS Year 12 Seminar Day is the first official school function of the year which recognises the special needs of our Year 12 students. It is a day which is held off campus, during which students experience an adult-style conference format which blends a series of keynote presentations and small group workshops on topics of interest related to Year 12 success.

A second element of the day is to give students a chance to strengthen bonds with their classmates, a recognition of the importance of peer support throughout the year.

One of the most important messages of the day was that there is clear evidence from a number of large scale studies that demonstrates that good sleep patterns and regular exercise can significantly increase student performance.

The overall theme of the day was for students to take control of Year 12 and to work towards ensuring that at the end of the year they are able to look back with no regrets.

Lisa Pope,
Y12 Coordinator

Introduction to the Christian Pastoral Support Worker

Hi my name is Ian Davis and I’m the new Christian Pastoral Support Worker at ASMS. This is some brief information about me and my role particularly for new families that have joined ASMS in 2013 and also an introduction for those that have returned for the new school year.

My role at the school is as a general support person to students, staff and families in the school community and I form part of the student support team that make up the ASMS. I’m also able to offer Pastoral Care, General Christian or Personal Advice to those who enquire, and help link families to community resources and services.

I come to the ASMS having worked in youth work roles in various organisations with my commitments for 2013 being to ASMS 2 days per week and also as the youth minister at Blackwood Church Of Christ. I’m excited to be a part of the ASMS community and look forward to working with you all throughout the 2013 calendar year.

Ian Davis
Christian Pastoral Support Worker
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On Tuesday, the ASMS held its 10th official clash of colours, commonly referred to as... Activities Day. The day began with the 100m races which always draw the most competitors. Tutor Groups and individual students ran, threw, jumped and stumbled through a series of events. Yellow held a clear day throughout the day with Green and Red competing for second place, dogging one another’s heels every event. Blue was clearly the underdog on the day, building points at a leisurely pace and keeping up with Green and Red.

We witnessed many brilliant athletic achievements during the day. Ivica Simunov and Jayden Bain jumped higher and higher to end the High Jump in a draw. Jacobi Ponuroy took the 400m races with ease, powering ahead of the opposition. Amy Love and Courtney Brideson dominated their individual races and helped their individual teams to gain more points.

Always the crowd favourites, the three-legged races, sack races and tyre relays bought out the instinctive competitiveness of the ASMS students in preparation for the main event. A battle of strength and teamwork, the tug of war allowed the students and staff of Green team to roar their approval as team after team fell before them, leaving the undefeated. The final round was held between the Green and Yellow Year 12 students. With the rope straining and heels digging, the two teams heaved till they could do no more. Yellow finally fell to Green with a final pull and the day ended.

With the scores counted, Graeme announced, with a touch of bias in his voice, that Yellow had one for the second year in a row by a devastating 97 points. Red and Green battled to the end, claiming second and third place respectively. Blue, despite their best efforts and receiving the spirit award, fell short to claim fourth place in the 2013 ASMS Activities Day.

Jason Byrne
Student

PROFESSIONAL DEVELOPMENT

Visiting Cambodian Educators

The ASMS is hosting two science teacher educators from Cambodia during their study tour of South Australia. Mr Seng Set & Ms South Em were keen to work with the ASMS to see first-hand how high quality teaching is supported and further developed. Working in partnership with Flinders School of Education, their program will involve them in ASMS professional learning activities and in a number of under and post graduate education courses. Seng & Seuth will be at the ASMS for term 1.

Jayne Heath
Senior Leader, Professional Development
On the 17 January three brave explorers set out for distant lands, to see new sights and participate in SCIENCE! They were Maryann, Tom and Lily. The land to which they ventured was known by the local populace as Singapore. Their method of transport was none other than the Singapore Airlines. On the journey, they faced many hardships, such as eating tasty plane food and Time Zone adjustments. Upon arrival at the Singapore airport, realising that they’d travelled two and a half hours back in time their journey truly began. We met ex-ASMS teacher Kerry Ann for dinner at Makansutra Glutton’s Bay, where we first tasted the cuisine of Singapore, and went for a walk to the Merlion. After eventually finding a taxi - which was a premium one, a mistake that we never made again – we ended our first night at our hotel in Little India.

The next morning started early. After a delicious breakfast and extensive day-planning, we left the hotel to wander around Little India. First stop was at the local shops; the Mustafa Centre which we visited to purchase a Singapore adaptor, as Graeme had given us the ones for Europe, which we discovered a little too late. We stopped for refreshments and to plan the rest of our sightseeing at a ‘restaurant’ on the side of the road. It was after this that we bravely Singapore’s public transport system; Adelaide Metro could learn a few things there. We had a cruise along the river, followed by lunch. For anyone visiting Singapore; when they say “iced Coffee”, they do not mean FUIC. They mean coffee. Strong, bitter coffee. With ice.

Our next destination was the Singapore Zoo, where we spent over an hour wandering around in the rain. When the zoo closed we headed over to the night safari, which started in about an hour. We indulged in “bongo burgers” for dinner, and for reference, they don’t have bongo drum skins in them, fortunately. Our entertainment was scantily clad performers breathing fire. Then after a wait in a queue which rivalled the size of the ones at bookstores when HP7 came out, we went on the Night Safari, before returning and collapsing in our beds.

The next day was our last of sightseeing, and we visited Jurong Bird Park in heavy rains. Following this we caught a taxi to Hwa Chong Institution; our home for the next 6 days. Our evening consisted of settling in and meeting new people. The next day we woke up bright and early and had breakfast in the dining hall - somewhat different to our hotel fare. We participated in ‘team bonding activities’ and went for an amazing race around Singapore. As people who weren’t locals, we followed along obediently, trusting our guides to not get us lost. At the end of the evening we were given a surprise; each a ticket on the Singapore Flyer, and we observed Singapore from above. Dinner was then eaten at local food court before we went back to the boarding school and collapsed once again.

On the 5th day of our experience in Singapore we got up for breakfast at six, sitting in our respective groups (EROS!! (No, HERACLES!)), after which all of the delegates and educators assembled to watch various cultural presentations in a lecture theatre called the 300-seater (Which happens to have 300 seats... I know right?), appropriately Hwa Chong Institute also has several other lecture theatres called the 200-seater and the 100 -seater have two hundred and one-hundred seats respectively. Anyway, for our cultural presentation we presented a short video Lily had prepared before the trip. The remaining delegates presented their cultural performances on subsequent days. Later in our separate groups we attended a master-class with either Physicist Professor Douglas Osheroff or Professor Dan Shechtman. As theme of the 2013 ISYF was “Breaking Through” questions asked surrounded that topic. After lunch we attended various A*STAR events at different departments, and returned to the boarding school in the evening for some “Free And Easy” time to ourselves.

The 3rd day of the ISYF began with a trip to Nanyang Technical University, where we participated in various science and maths activities, after which we visited some labs. By that time I had decided to go back to the boarding school because I was feeling unwell. After the other laureates had ended their visits to various departments of NTU, they had had lunch and a Panel discussion with Nobel Laureates and Eminent Scientists, before going out to dinner.

The Nobel forum on the subsequent day stood out as a definite highlight of the ISYF. During the forum Nobel Laureates and a prominent scientist answered questions raised by delegates and educators alike. Held directly after the Nobel Forum was the poster exhibition where students displayed a poster they’d made, ours being a poster on Tissue Culture. In the morning we had various delegates conduct Student Project Presentations which were related to their posters; all of which were interesting and thought-provoking.

Our last day in Singapore had come way too soon. Like the previous day, it wasn’t as action-packed as our first. We had one last master-class type dialogue session with Nobel Laureates and Eminent Scientists, after which we had a lot of time to prepare for the closing ceremony and dinner. We went to an exquisite restaurant and were served around 10 courses. As soon as the educators had left the ball-room the ‘dancing’ began. Overall it was a great experience thoroughly enjoyed by all present.

Tom Fiebig & Lily Kent Students
Studying abroad was always my dream when I was a little child, because I wanted to experience different cultures in the world. At the age of 16, I was so fortunate to come to South Australia to do my high school with the support of my parents.

When I first came to here, the friendly and passionate IES [International Education Services] teachers and homestay family made me feel like coming home. My homestay family were a very nice and kind couple. They helped me settled down in this beautiful city. To make me get used to the life, my homestay "father" tried his best to make Chinese dish for me. I did not fell homesick in this charming city.

My study in Adelaide is also an unforgettable travel. Australian Science and Mathematics School is an outstanding school. The teachers there are patient and professional. They helped me change my mind about learning and life. Study in Australia is completely different from the study in China. I can do what I want to do. For example, I can choose the subjects according to my own hobby. I think this is the most important fact that leads me to a high achievement. The creativity is also the thing that teachers encourage us to develop. Creativity is more vital than knowledge in the modern society. I think the students in Australia are all-sided developed people.

I love this city-Adelaide. It has amazing natural environment, and everyone come to here will be attracted. It also has multicultural social environment. The mixture of western and eastern culture can make everyone get to love this city. The two years in Adelaide was meaningful for me. Thank you Adelaide. Thank you everyone in Adelaide.

Dexter Feng
Student  2011 & 2012