



### FROM THE QMEA DIRECTOR

QMEA has again set a cracking pace for the start of 2016 with a new Centre of Excellence, sponsors and a QMEA school alongside new events and experiences. In March, the Centre for Robotics and Automation, in partnership with QMEA, foundation school Alexandra Hills State High School and QUT, was officially launched. The centre represents an exciting development aimed at preparing our young people for the future world of work. In Mount Isa with the support of foundation sponsor Glencore Mount Isa Mines, we welcomed Good Shepherd Catholic College as the 35th school to join the QMEA network. We were also delighted to bring on board two new sponsors in January, Hastings Deering and the Society of Petroleum Engineers.

Our industry partners continue to provide invaluable support and we acknowledge Glencore Mount Isa Mines, BHP Billiton, APLNG, QGC, Santos, Jellinbah, Wesfarmers, Glencore Wandoan Coal Project and the Queensland government. We also welcomed new QMEA Board members Helen Huntly, CQU Deputy Vice-Chancellor replacing Nik Babovic and Deryn Vahyl Meyer Assistant Dean International Engagement, Science and Engineering Faculty at QUT replacing Karen Whelan. We thank both Nik and Karen for their support and look forward to the contributions of Helen and Deryn.

A solid program of activities and events delivered by our expert team, Tammy Grady, Dan Rea and Kym Frost is well on the way with 1,200 students so far participating in 33 events. These included our automation and robotic themed Resourceful Robots, signature camps and the new Classroom to Curriculum sessions. QMEA as the talent pipeline into the resources sector continues to break new ground with the successful delivery of the BHP Billiton Apprentice Readiness Program which provided the new apprentices with practical activities and training in health and safety in preparation for their new jobs.

Following on from the government's 'Next Step Student Destination Survey' which indicated over the past ten years 21% of QMEA students entered engineering or a related field of study compared to 13% from non-QMEA schools, our cohort of 2015 Ambassador students have now followed pathways into further education, training or employment in a host of disciplines from engineering to medicine and trades. In addition, our sponsor companies continue to demonstrate support for both the QMEA and their local regions, with Glencore Mount Isa Mines signing up 27 apprentices in 2016, 90% of the year 12 leavers going into these apprenticeships coming from QMEA schools. These results indeed demonstrate QMEA is achieving its objectives around attraction of students to the resources sector and other STEM related industries.

The remainder of the year sees us focused on the delivery of a robust program to benefit our students and teachers such as our professional and trade camps and Physics in Flight grand final. These activities were supported by the rollout of a dedicated teacher professional development program again on automation and robotics to assist teachers and their students in curriculum delivery.

- Katrina-Lee Jones

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(L to R) Member for Capalaba Don Brown, Redland City Mayor Karen Williams, QUT Assistant Dean Karen Whelan, Alexandra Hills SHS Principal Gail Armstrong, students and QRC Chief Executive Michael Roche



Students participate in a STEM for School Kids workshop



## IN THE NEWS!

### Students boost future job prospects in automated world

School students have boosted their future job prospects in an increasingly automated work force with the launch in March of the new Queensland Minerals and Energy Academy/Alexandra Hills State High School Centre of Excellence in Automation and Robotics.

The centre, established in a partnership between QMEA and Alexandra Hills SHS with support from Queensland University of Technology (QUT) and the Queensland government. The centre has been created to inspire school students to pursue careers in coding, computer science and robotics and to assist them to be ready for the challenges of the future work force where it's expected almost two-thirds of current jobs will become automated.

The Centre of Excellence will also benefit the resources sector by providing a pipeline of highly skilled talent with knowledge and expertise in big data, systems, processing and analysis.

The QMEA has been delivering school programs with a significant component of robotics and automation for many years with the centre representing not only an accelerated approach in this space but a real game changer in providing students with cutting edge experience to become innovation and technology architects of the digital age.

To complement the initiative, from July there will be a state wide roll out of teacher professional development and student workshops to QMEA schools, with a particular focus on the regions.

### Young apprentices learn about health and safety

QMEA is venturing into new territory and taking a greater role in training up and coming resources sector workers, starting with a new course for apprentices from BHP Billiton.

Twelve new BHP Billiton apprentices (six male and six female) graduated from a four-week Work Readiness Program, where they worked in an environment that replicated the sites where they will be starting their apprenticeships. The program was delivered at the 'big blue shed' training centre at Moranbah State High School and is an extension of the work QMEA already does to develop pathways for school leavers.

It's the first time QMEA has taken a key frontline role in ensuring that young apprentices are work-ready for their new roles in the resources sector.

The training program had a focus on skills, health and safety. The apprentices have since been placed at BHP Billiton Mitsubishi Alliance (BMA) operations at Goonyella Riverside, Peak Downs, Saraji, Broadmeadow and Blackwater mines and at the Hay Point Coal Export Terminal near Mackay.

The Moranbah training course will enable the apprentices to be work ready and involved learning hand skills, welding and basic electrical knowledge in an environment that promotes BHP Billiton's work culture and ensures that their transition to work at the end of the program is safe and seamless.



Matthew Gordon, BMA, with Alexandra Hills SHS students at the CoE launch



Alexandra Hills SHS students complete a robotics challenge



Apprentices participate in the Work Readiness Program



Damien Kee with Chanel College students and Science Coordinator

### Bringing robotics into teachers' classes

The QMEA is offering a number of exciting teacher professional development opportunities in 2016. A focus of these sessions is around incorporating robotics and coding into the classroom.

Teachers in Townsville and Mackay have been first to launch into an afternoon of introduction to LEGO robotics and share ideas around the potential of these engaging tools. Many of the teachers had never worked with the robots and the software before so it was a great way to begin their journey with further opportunities to develop their digital technology skills available later in the year thanks to QMEA.

Acting Head of Science at Kirwan SHS Patrick Macleod commented *'This professional development really opened our eyes and Dan's presentation got us very animated & competitive around programming these robots.'*



Glencore Mount Isa Mine 2016 apprentices

### QMEA students in Glencore apprentice intake

QMEA foundation sponsor Glencore Mount Isa Mines has demonstrated its support for QMEA and its commitment to local operating regions by signing up 27 new apprentices and giving them the opportunity to complete a trade qualification. Out of this intake 90% of 2015 year 12 school leavers came from QMEA schools with four students attending our Make it Now in Trades (MINT) camp. Alison Wakefield, a former QMEA ambassador, was a part of this cohort. The new apprentices will train as diesel fitters, electricians, auto electricians, fitter welders, radio technicians and refrigeration mechanics.

## STIMULATING INTEREST AND MAKING CONNECTIONS - YEARS 7, 8, 9

### Physics in Flight

Over 400 Year 7 students from Tannum Sands SHS and Toolooa SHS spent an afternoon learning about the fun of physics when two young engineers from Santos GLNG and two third year engineering students from CQU visited their school.

Charlotte Barker and Seamus Connor from Santos GLNG and the Society of Petroleum Engineers spoke to students about their own study and career pathway, while Ian Gracias and Emma Kyle from CQU talked about their time at school and how university life differs from senior schooling.

While at the schools, the visiting representatives encouraged the hundreds of year 7 students to get involved in a state wide QMEA program, Physics in Flight.

Physics in Flight is a paper plane throwing competition to determine the longest flight time (not distance) and will see Tannum Sands, Toolooa and Gladstone state high schools and Chanel College all compete for the trophy.

Students are given five minutes to build, test and tweak their paper plane before throwing for the longest flight time. The top six times get to go to the grand final in the last stage of the competition.



Charlotte Barker, Santos GLNG with Tannum Sands SHS student



'The visit from Seamus and Charlotte was just fantastic and it ties in perfectly with various curriculum this term,' said Tannum Sands SHS teacher, Liz Bell.

The students also designed paper planes and gained some valuable information from the four visitors around physics and flight time to hopefully achieve the winning time.

'Seamus and Charlotte were so good. They took a lot a time to speak with us and Seamus gave me some really good tips that I will use in the competition,' said Year 7 student Tayla Grady.

### **Teachers and students get resourceful with robots**

Students and teachers from three QMEA schools in Gladstone have been very resourceful and learnt more about robotics and programming with a series of hands-on classroom workshops held during February.

Independent technology education guru Dr Damien Kee spent three days teaching the 'Resourceful Robots' program, which involved brainstorming with 150 students from Year 8 to Year 12, challenging them to build advanced circuits that could enable them to perform robotic tasks that they had never attempted before.

Dr Kee also provided professional development for 15 teachers with new skills and knowledge around robotics, IT and programming to enable them to provide a higher level of this important education for their students back in the classroom.

QMEA schools Gladstone and Tannum Sands state high schools and Chanel College, were each involved over the three days.

Year 9 students were educated and entertained with robot programming and Dr Kee discussed the incorporation of specialised sensors with the robot platforms.

The workshops received an enthusiastic response from all students and teachers.

'Last year I went to Brisbane for a Lego League (robotics) competition because I really like it and find it interesting. Today is more challenging and fun and Damien knows a lot about robotics and coding so it's been fun learning from him,' said Jemma Halliday a Year 7 student from Gladstone State High School.

'I also have been in the Lego League competitions so it's really good to be able to keep doing this now I'm in high school. My favourite subject is science and I love doing pracs and an experiment can show you things you never thought were possible,' said Kalia Kurkwood, Year 7 from Gladstone State High School.

'This was engaging and insightful professional development that Tannum Sands teachers will take straight to their classrooms and use with students to embed STEM into their classes,' said Lisa Mazzer, STEM teacher from Tannum Sands State High School.



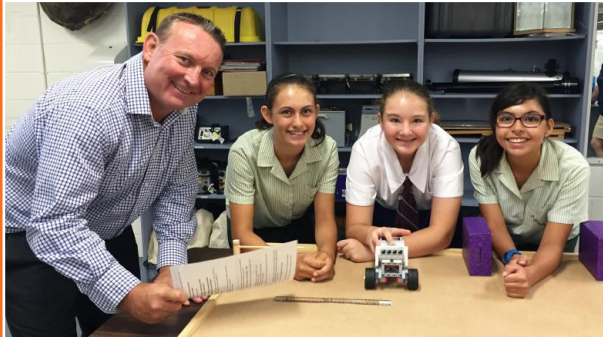
Ian Gracias and Emma Kyle of CQU with Toolooa SHS Teacher Ashley Sauer and some of his year 7 students



Gladstone SHS students showcase their finished advanced circuit



Gladstone SHS students participate in the Resourceful Robots program, led by Dr. Damien Kee



Matt Gordon, BMA, assists students at the Expand Your Mind workshop held at Alexandra Hills



Alex Wood of The Society of Petroleum Engineers with Year 9 students from Wavell Heights and Alexandra Hills SHS



Alex Wood assists a student at the Expand Your Mind workshop

'With QMEA giving our college access to experts of such high calibre as Dr Damien Kee, it allows us to provide the latest and most up to date information regarding robotics and programming to our students' said David Fisser, Chanel College science co-ordinator.

'A great day was had by all and many thanks go to QMEA for their time and funding of this very important field of study,' added Mr Fisser.

### Expanding young minds

Resources sector professionals have provided over 100 Year 9 school students with some first-hand experience of careers in their industry at two QMEA Expand Your Mind workshops held during March.

Matthew Gordon, Training Specialist with BMA along with Alex Wood of the Society of Petroleum Engineers were on hand to encourage students from Alexandra Hills and Wavell state high schools to consider careers in science, technology, engineering and maths.

Earlier in the month, Kristy Marks of BMA worked with students from Emerald and Dysart in a number of STEM related activities at Moranbah SHS.

The students took part in practical, higher order thinking projects in environment, chemical processing, robotics and automation as well as design and engineering. Visiting industry representatives shared their experiences of study and career pathway with all the students.

'Today all the students impressed us with their ability to plan and think through the steps to each problem. Some students were working with programming software for the first time and they each did a fantastic job,' said Mrs Robyn Flexman, Head of Science at Alexandra Hills SHS.

'Expand your Mind involves higher order thinking for students and for year nine's to be doing activities such as this at this age is wonderful,' added Robyn.

The students appreciated the opportunity to engage in practical exercises that stimulated their knowledge and understanding of STEM careers.

'The best part of the day was being allowed to think through the problems ourselves with our teams. Usually we get told what to do and our teachers are helping us. Today was all about us finding the steps to the solution,' said Alexandra Hills SHS student Alicia Curry.

### Energising Year 9 students

Year 9 students from Tannum Sands SHS were visited by Rohan Parker, Electrical Systems Engineer from NRG who spoke to them about their Term 1 science curriculum related to energy production.

Rohan shared his experiences working in NRG and the process from how electricity is made to sending it to the grid.

Students peppered Rohan with questions about different forms of energy as well as technical questions around various types of circuits.

Rohan gave students an insight into his day to day working life as well as shared his personal story of study, schooling and his career progression.



## **INFORMING DECISIONS AND INFLUENCING PATHWAYS - YEAR 10**

Year 10 students that showed an aptitude for trade or operational roles had an opportunity to attend QMEA's toolkit for schoolkids days held in Moranbah, Emerald, Brisbane, Townsville, Mount Isa, Mackay and Gladstone, with the Moranbah and Mackay events being girls only. The participants of these events had the opportunity to engage with apprentices and tradesmen from industry and understand the types of tasks they perform daily in their trades and the relevance of school subjects in industry. The participants of the girls' only events in Moranbah and Mackay also had the opportunity to listen to some inspiring female guest speakers and learn of their transition from school to industry. A new event was held this year in Brisbane at Hastings Deering Training facility where the students experienced this state of the art facility and talked to representatives from all levels of engineering.

A student participant commented; *'It was great to learn about the different career pathways regarding engineering'* while a Hastings Deering employee remarked *'The group interaction was awesome.'*

### **Students inspired by STEM professionals**

High achieving year 10 students interested in STEM pathways have learnt about the various roles and career progression opportunities available in the resources sector at the QMEA STEM 4 School Kids workshops held in Mount Isa, Townsville, Mackay, Moranbah and Emerald. The events bring together STEM industry professionals to guide the students through a series of practical challenges involving geology, chemistry, engineering and environmental fields of study.

Teachers praised the unique opportunity for bright young students to engage with industry professionals. 'students all really enjoyed the hands on activities, but it was also great to hear from the industry representatives as I don't think the students had any idea as to how many different roles there are within the industry' said Moranbah State High School Head of Science Amy Gilbert.

Students enjoyed getting involved with the practical activities which are based around the mining process from exploration through processing and rehabilitation. As one student from Emerald SHS remarked 'I enjoyed learning new things and meeting new people. I also liked hearing about how the industry professionals got to where they are and the details of the jobs they work that have to do with STEM'.

Already this year there have been over 150 students attend a STEM 4 School Kids workshop and there are many more events planned across the state including Rockhampton, Brisbane, Gladstone and Wandoan.

### **Mapping future pathways**

Representatives from ConocoPhillips and McCosker Contracting spent the afternoon with over 200 year 10 students from Tannum Sands SHS talking about the importance of subject selection for senior grades.

Nedizha Thierry from APLNG ConocoPhillips and Bob McCosker of McCosker Contracting hosted two sessions with the year 10 students who are about to be tasked with choosing their subjects for years 11 and 12.



A student completes a hands-on activity at the Moranbah Toolkit 4 School Kids workshop



Kirsty Parker, BMA, with students at a STEM 4 School Kids in Emerald



Federal Member for Dawson, George Christensen, works with students at a Mackay STEM 4 School Kids workshop





Nedizha Thierry, APLNG with year 10 students

With senior subjects being vital for career mapping it was an opportune time to bring insightful information to the students in their own setting.

'This is an important time all Year 10 students as the subjects studied in senior sets can greatly influence a student's career path directionality. Australia Pacific LNG is pleased to be a part of a program that helps students in the decision making process,' Nedizha Thierry, Australia Pacific LNG.

The two visiting representatives were bombarded with questions from the students which highlights the need for these type of sessions.

### CHALLENGING AND PREPARING - YEARS 11 AND 12

Year 12 students and their teachers from Central Queensland schools participated in the BMA MINT camp held in Dysart in April. The 21 participants worked in groups and were involved with Saraji apprentices in building 4 motorised pushbikes. The groups worked in the Dysart Trade Training centre and created a machine from 'dumped' bikes that was safe, functional and one that they were extremely proud of.

One camp participant noted; 'The challenge was engaging and required everyone to work together to complete the task,' while a participating teacher commented 'the QMEA MINT camp is the highlight of the year, providing students with an amazing opportunity for an insight into the mining community'.

The camp attendees also had to present to the management of BMA's Saraji mine what they had learned over the week and had their bikes judged which is always a very competitive and an exciting culmination to the week.

### QMEA Ambassadors leading the way

The 2016 QMEA Ambassadors have launched into their final year of school with great passion and excitement. After coming together at the end of last year for a three day camp in Brisbane the ambassadors have gone back to their schools and communities to spread the word about the amazing opportunities available for students through QMEA. A number of ambassadors have supported events for younger year levels at their respective schools and Spinifex State College pair Ben Russell and Sabrina Finucane spent time on their summer holidays behind the scenes at Mount Isa Mines while meeting with senior staff.

### Aspiring Dysart engineer wins Qld women in resources award

A very special opportunity to apply for a new QMEA award was taken up by a number of our female ambassadors at the International Women's Day - Women in Resources breakfast, held in March. We are extremely proud of Dysart SHS ambassador Tara Toshack who was successful.

An outstanding young lady she enjoyed a trip to Brisbane for the awards ceremony and a visit to BMA head offices to meet more inspiring women in resources and to say thank you for BMA enabling the whole trip to happen.

Tara, who is also a member of Young Scientists of Australia, has written many published pieces on the importance of mentoring and supporting



Student participants of the BMA MINT Camp at Saraji mine



2016 QMEA Ambassadors visit Hastings Deering



Tara Toshack, Dysart SHS with her Qld Women in Resources award

girls in science, technology, engineering and maths subjects, which can lead to careers in the resources sector.

BMA Asset President Rag Udd said BMA were proud to support the youth of Central Queensland in their growth and development towards careers in engineering and resources and was particularly proud to see a student from their region of operations excelling and seeking to apply her talents in a STEM profession.

QMEA will continue to encourage young women to take up maths and science subjects in schools and expose them to the careers that can lead to the resources sector and other STEM industries.

### Energy experts visit with Senior Science

Two energy experts visited Chanel College Year 12 Physics classes in April to expand upon their classroom study of 'energy in the home'.

Russell Jorgensen and Rohan Parker both from NRG Gladstone, provided the classes with real world insight into the production of energy at the local Gladstone Power Station.

Most interesting was hearing about the changes in technology and processes that the industry has seen throughout the years.

Students also spent time talking to the visiting representatives about solar panels in the community and its contribution to the grid.

### THANK YOU TO OUR QMEA SPONSORS

Without our sponsors' ongoing support, the QMEA and the events and activities we provide for teachers and students would not be possible.



Female students enjoying the Toolkit 4 School Girls workshop held in Mackay



Without our sponsors, events such as the MINT Camp would not be possible

### UPCOMING EVENTS

**22 June, 2016**

Physics in Flight Grand Final, Gladstone (Chanel College)

**26 June - 1 July, 2016**

Glencore MIM MINT/MINE camps, Mount Isa

**20 & 21 July, 2016**

Ambassador program webinars (STEM & VET)

**11-14 Sept, 2016**

CQU MINT camp, Biloela

**11-16 Sept, 2016**

BMA MINE camp challenge, Moranbah

**July - December 2016**

State wide rollout automation and robotics TPD

For more details, and to view all events, see our [calendar](#).



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MINES  
A GLENORE COMPANY



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We have the energy.



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