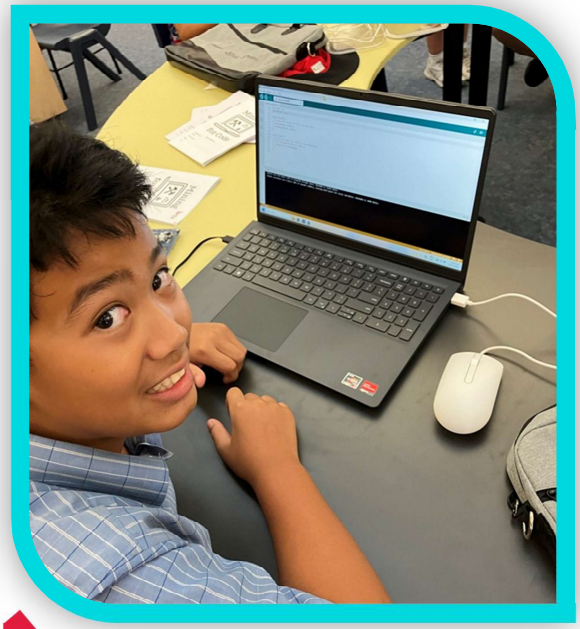
Queensland Minerals and Energy Academy

Mackay Regional Hub Schools Program Offering 2026



RESOURCES SKILLS ACADEMY

Discovering Rocks and Minerals

Year 4-6 – Science
(Earth and Space Science)

This hands-on workshop introduces students to the fascinating world of rocks and minerals and how they connect to everyday life. Working in small groups, students observe, describe and test real rock samples, develop scientific language, and explore how different rocks and minerals are used in the world around them.

Time: *70 – 100 Minutes*
Capacity: *1 class per workshop*
Provided by school: *Nil*
Curriculum Links: *AC9S3U02, AC9S4I03, AC9M3SP02*

Exploring Beneath Our Feet

Year 4-6 – Science & Mathematics
(Earth and Space Science)

In this interactive workshop, students explore how geologists investigate what lies beneath the Earth's surface. Using a layered earth model, students simulate drilling, collect core samples, and map underground mineral deposits. Through hands-on investigation and problem-solving, students develop an understanding of geological exploration and how resources are located to support modern society.

Time: *70 – 100 Minutes*
Capacity: *1 class per workshop*
Provided by school: *Colouring Pencils*
Curriculum Links: *AC9S5U02, AC9S5I01, AC9M5SP02*

YEARS 4 - 6

Junior Geologists

Year 4-6 – Science & Mathematics
(Earth and Space Science)

Want more than one lesson? Package Discovering Rocks and Minerals and Exploring Beneath Our Feet into a half-day Junior Geologist workshop. Students will gain a deeper understanding and passion for geology. The program builds curiosity, teamwork and problem-solving while showing how geology helps us understand and use Earth's resources.

Students will undertake the same activities in both workshops in the same half-day session. Activities include:

- *Discovering Rocks and Minerals*
- *Exploring Beneath our Feet*

Time: *Half day*
Capacity: *1 class per workshop*

YEARS 4 - 6

Minebot Mission

Year 4-6 – Digital Technologies

This workshop introduces students to robotics using Lego Spike through a mining-themed challenge. Students learn the basics of building, programming and operating a robot while exploring how automation is used in the resources sector. The workshop requires no prior robotics knowledge.

Time: *70 – 100 minutes per workshop*
Capacity: *Up to 24 students*
Provided by school: *Nil*
Curriculum Links: *AC9TDI4K01, AC9TDI4P05, AC9TDI6P02, ACT9TDI6P05*

Minebot Challenge

Year 4-6 – Digital Technologies

In this interactive workshop, students apply their robotics skills to a series of mining-inspired challenges using Lego Spike. Working in teams, students program and refine their robots to complete tasks in a competitive, problem-solving environment. This workshop is designed for students with some prior experience in robotics.

Time: *Half day or full day workshop*
Capacity: *Up to 24 students*
Provided by school: *Nil*
Curriculum Links: *AC9TDI4K01, AC9TDI4P05, AC9TDI6P02, ACT9TDI6P05*

Not quite what you're looking for?

QMEA is expanding its offering to include workshops specifically designed for primary-aged students. Schools are encouraged to get in touch if they have a particular STEM topic or curriculum focus in mind. The QMEA will work with schools to source or develop age-appropriate, hands-on workshops contextualised to the mining and resources sector.

For more information, or to discuss a custom workshop request, please contact mackay@qmea.org.au

YEAR 7 and 8

Pulleys for Productivity

Year 7 – Science
(Physical Sciences)

A practical, hands-on investigation using pulley systems as simple machines. The workshop is linked to various mining machinery to understand how they have been designed to account for mechanical advantage in industry.

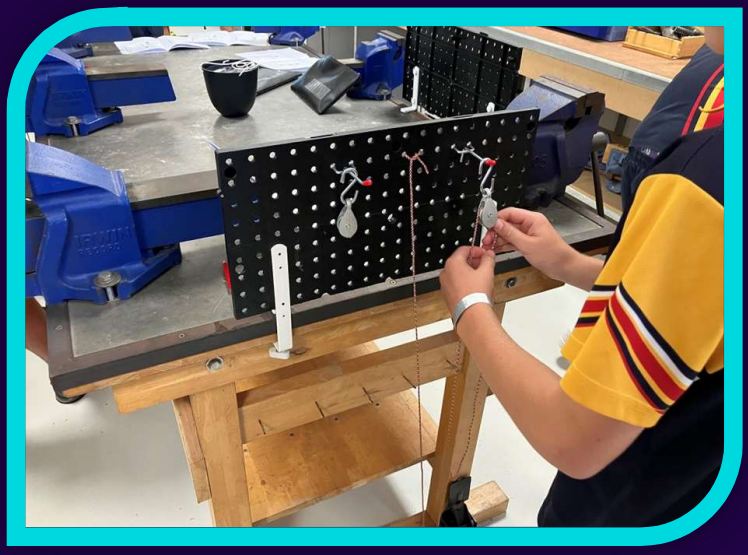
Time: *70-100 minutes per workshop*
Capacity: *1 class per workshop*
Provided by school: *Nil*
Curriculum Links: *AC9S7U04, AC9M7A04*

Mining for Code

Year 7 & 8 – Digital Technologies

This workshop is an introductory session to Arduino coding that uses Grove Beginner Kit sensor packs. Students identify pseudocode and key coding language, then explore designs that incorporate the ideas of input and output to increase safety in the resources industry.

Time: *70-100 minutes per workshop*
Capacity: *Up to 24 students is ideal per session*
Provided by school: *Student laptops may be required*
Curriculum Links: *AC9TDI8P05, AC9TDI8P04*



Heavy Hydraulics

Year 7 & 8 Technologies

Students work in groups to assemble and complete a model hydraulic arm. They then use technology and apply the design thinking process to model and ideate a product for use within a mining and energy context. Students use basic makerspace items to construct and present their working prototype before an evaluation of the process and product.

Time: *Full day workshop*
Capacity: *1 class per workshop*
Provided by school: *Nil*
Curriculum Links: *AC9TDE8K06, AC9TDE8P02*

YEAR 7 and 8

Pit to Port

Year 7/8 – Mathematics
(Number/Measurement)

This whole day workshop explores the way Queensland's resources are extracted, transported and exported. Students learn about the use of automation, focusing on extraction methods, logistics and shipping. They apply project management and communication skills, which are important within the resource sector.

Time: *Full day workshop*
Capacity: *1 class per workshop*
Provided by school: *Nil*
Curriculum Links: *AC9M7N04, AC9M7N07, AC9M8M04*

Treasures of the Earth

Year 8 – Science
(Chemical Sciences)

This session investigates the linkages between elements on the Periodic Table and their uses in everyday life. The associated activity is conducted as a scavenger hunt using the "30 Things" publication, produced by the Minerals Council of Australia.

Time: *70-100 minutes per workshop*
Capacity: *1 class per workshop*
Provided by school: *Nil*
Curriculum Links: *AC9S7U06, AC9S8U04*

Watch it Cool

Year 8 – Science
(Earth and Space Sciences)

A look at how the cooling rate of an igneous rock can create crystals of different shapes and sizes, which allows geologists to make inferences about rock formation conditions. Students conduct an experiment that investigates how the speed of cooling affects crystal size and shape.

Time: *70-100 minutes per workshop*
Capacity: *1 class per workshop*
Provided by school: *Some laboratory equipment and chemicals*
Curriculum Links: *AC9S8U04, AC9M8M05*

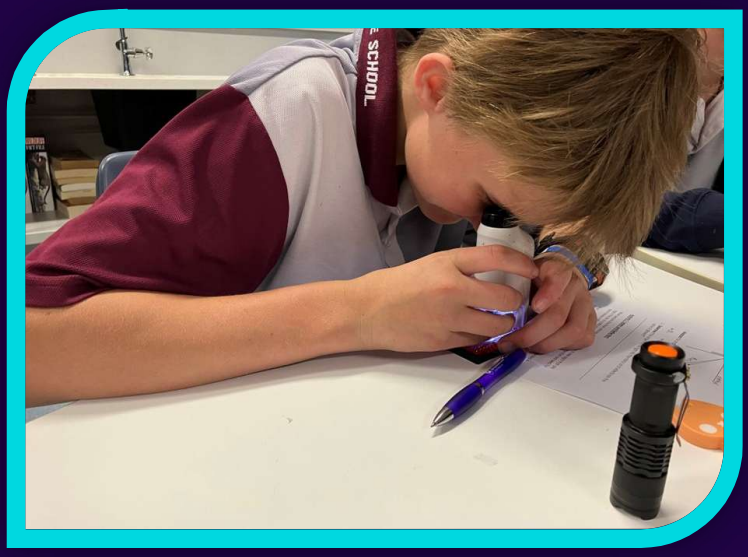
YEAR 9 and 10

Lighting the Way

Year 9 – Science
(Physical Sciences)

Building on their knowledge of how light travels, students investigate the method by which retroreflectors are a means of passive light reflection. The use of retroreflectors within the resources sector is explored and how they underpin safety on a mine site.

Time: *70-100 minutes per workshop*
Capacity: *1 class per workshop*
Provided by school: *A room that can be darkened*
Curriculum Links: *AC9S9U04, AC9M9M05*



Resourceful Robots

Year 9 & 10 – Digital Technologies

Students work collaboratively using Lego robots to navigate a course to solve a problem related to the resources sector. The workshop is designed as an introductory session for students with little to no prior experience with Lego robotics.

Time: *Half day workshop*
Capacity: *Up to 24 students is ideal per workshop*
Provided by school: *Nil*
Curriculum Links: *AC9TDI10P05, AC9TDI10P09*

STEM Unearthed

Year 10 – Science/Mathematics

This program is packaged from a selection of activities outlined below that link to different stages of the resources industry, including exploration, processing and rehabilitation.

Time: *Half day (2 activities) or full day (3 activities) workshop* | ***Capacity:*** *1 class per workshop*

Finding Ore

From geological exploration to rehabilitation in a gamified context, teams compete to be the most financially viable and sustainable in their practice. Strategy and teamwork are the keys to success when completing this activity.

Provided by school: *Nil*
Curriculum Links: *AC9S10H02 AC9HG10K01*

Engineering the Perfect Solution

Students aim to create a product within specific parameters. With all the elements of process engineering, students explore the ideas of inputs and outputs in their quest to design the ultimate, replicable process.

Provided by school: *Some laboratory equipment*
Curriculum Links: *AC9S10I02, AC9S10I03*

Core Drilling Analysis

Students learn how geologists explore beneath the Earth's surface. Working in teams, students model, map and pinpoint a hidden economic deposit.

Provided by school: *Nil*
Curriculum Links: *AC9S10I05, AC9M10M05*

Copper Extraction

Chemical and physical processing is a fundamental concept in turning ore into usable metals. Copper extraction is a laboratory set activity where students investigate different methods of extracting copper.

Provided by school: *Some laboratory equipment*
Curriculum Links: *AC9S10U07*

SUPPLEMENTARY OPTIONS

Classroom to Careers
Any Year Level

An industry representative will connect classroom learning to real-world applications, showing how maths, science, and other subjects are used in their jobs. Sessions can be tailored to your curriculum and include career pathway insights. Available in-person or online.

Time: *30 – 60 minutes*
Capacity: *Ranging from 1 class to a full cohort – depending on space*
Provided by school: *Nil*
Curriculum Links: *As requested*

Digging Into Your Future
Year 9 & 10 – Career Development

QMEA's career development activities build employability skills, explore pathways in the resources sector, and connect students with real-world opportunities.
Utilizing the Careers4ME tool, the program can incorporate personality tests, resume writing, job interviews, employability skills.
Flexible options available to suit your school's needs.

Time: *70 – 100 minutes per session*
Capacity: *1 class per session*
Provided by school: *Nil*
Curriculum Links: *General Capabilities*

Technical Upskilling for Teachers
Teacher Professional Development

QMEA offers tailored sessions to strengthen STEM pedagogy, explore project-based learning, and integrate Minerals and Energy contexts into the classroom. Current offerings include introductory technical skills such as Robotics, Arduino, career development, and Oresome Resources. Sessions are available on request and can complement other QMEA programs. Available in-person or online.

Time: *30 – 60 minutes*
Capacity: *Flexible*
Provided by school: *Nil*

Careers Planning Information
Any Year Level

Does your school want careers information around the resources sector? QMEA can provide your teachers or guidance councilors with resources about careers in the resources industry. We can also attend your school's careers fair/event to showcase industry opportunities.

Time: *As requested*
Capacity: *Flexible*
Provided by school: *As needed*

Shape Our Future

Career Pathways

This resource showcases videos, interviews, career stories, and factsheets—all linked to university and trade pathways. Students can explore authentic insights into the resources sector and learn how classroom learning connects to future opportunities.

https://shapeourfuture.com.au/

Oresome Resources

Teacher Resources

Free Minerals and Energy STEM resources for teachers, including interactives, videos, factsheets, printable activities, learning modules, and animations.

https://www.oresomeresources.com/

ON DEMAND

These programs are free for QMEA partner schools. Teacher PD sessions can also be provided.

QMEA Apprentice Aptitude Test

Career Development Tool

The QMEA developed Apprentice Aptitude Test eLearning modules are intended to be used as a preparatory tool, and the use of the QMEA Apprentice Aptitude Test before undertaking a real apprentice aptitude test during the application process is hosted online by Blue Dog Training.

Email your QMEA contact for access.

Careers4ME

Career Development Tool

An interactive personality tool that helps students match their strengths to careers in the resources sector. Includes a resume guide and employability skills resources. Available online or as a QMEA-supported session for partner schools.

Email your QMEA contact for more information.

"Thank you for providing our students the opportunity to get exposure to electronics and coding in mining."

- Teacher, Mackay Christian College

"These workshops demonstrate how the Academy is adapting and evolving with industry needs, ensuring the future resources workforce has the right skills to embrace opportunity."

- The Hon. Ros Bates MP, Minister for Finance, Trade, Employment and Training

MORE INFORMATION

All QMEA Regional Hub workshops are **free** for schools and are funded by the Queensland and Australian Governments.

Book in early to secure your spot as QMEA's programs often book out well in advance. We appreciate your flexibility when suggesting preferred dates in case your first preference is not available.

Preference will be given to schools who are able to commit to a half or full day of engagement at their school. This could be with one group for the whole day, or a mixture of programs, students and year levels across the sessions.

For more information about these programs or if you have questions about what might be right for your school, please email **mackay@qmea.org.au**.

» BOOK YOUR SESSION

Limited dates are available throughout 2026 and are filled on a first-come, first-served basis.

Please email mackay@qmea.org.au or visit the QMEA website to submit your preferred dates, times and workshops:

http://www.qmea.org.au/mackay-regional-hub

Mackay School Program Overview

Program Name	Year Level	Curriculum Area	Time Allocation	School Requirements
Discovering Rocks and Minerals	4 5 6			
Exploring Beneath Our Feet	4 5 6			
Minebot Mission	4 5 6			
Minebot Challenge	4 5 6		OR	
Pulleys for Productivity	7			
Heavy Hydraulics	7 8			
Mining for Code	7 8			
Pit to Port	7 8			
Treasures of the Earth	8			
Watch it Cool	8			
Lighting the Way	9			
Resourceful Robots	9 10			
STEM Unearthed	10		OR	

Curriculum Area Legend

- Chemical Sciences
- Design & Technologies
- Digital Technologies
- Earth and Space Sciences
- Mathematics
- Physical Sciences

Time Allocation Legend

- 1-2 lessons per workshop
- Half day per workshop
- Full day workshop

School Requirements Legend

- Nothing to provide
- ITD specific PPE
- ITD workshop access
- Some laboratory equipment
- Some stationery required
- Student laptops may be required

Australian Government

Queensland Government

The QMEA Regional Hubs Program is a joint initiative of the Australian and Queensland Governments.

Mackay Regional Hub Contact

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