



Thuringowa State High School
James Cook University
Global Tropics Future Project



Global Tropics Future Project

The Global Tropics Future (GTF) project is a unique partnership between the Department of Education (DoE) and James Cook University (JCU), with the vision and drive to achieve improvements in education outcomes and workforce participation in Tropical and North Queensland.

Thuringowa State High School leads the collaboration with James Cook University and aims to boost engagement in Science, Technology, Engineering and Mathematics (STEM) for Years 5 to 9 students. The project enables like-minded students to connect, collaborate and explore their STEM interest and passion through a range of enriching and challenging learning opportunities.

Students engaged with the GTF project are collectively known as the Global Tropics Future Young Scholars. With the goal of developing 21st century skills (problem solving, inquiry, critical thinking, creativity and collaboration), the Young Scholars build their STEM portfolio through a blended model of delivery via virtual and face to face learning that incorporates emerging sciences and current global STEM problems.

Queensland Virtual STEM Academy (North Queensland)

Thuringowa State High School is a delivery site of the Queensland Virtual STEM Academy (QVSA) online courses. Using an innovative, real time, virtual platform, students connect with other students from across Queensland and STEM professionals to solve current global STEM problems while developing their 21st century skills. QVSA courses take three forms: Skill Builders, Grand Challenges and Challenge Your Thinking sessions.

A Skill Builder focusses on a specific learning approach or skill that is core to navigating and exploring the fields of STEM (for example Scientific Inquiry, Entrepreneurial Thinking).

Grand challenges are ambitious but achievable goals that harness science, technology and innovation to solve important national or global problems. The key outcome of a Grand Challenge is to develop connections for students between their understanding and the real world.

The Challenge Your Thinking (CYT) sessions provide opportunities to engage and interact with researchers and industry leaders from across the globe to explore answers to current STEM questions.



Course Overview - Round 1, 2021

All Round 1 programs are 10 weeks in duration and are scheduled for one 70min lesson per week.

The 10 week program is split across the holidays (5 weeks at the end of term one and 5 weeks at the beginning of term two).

Grand Challenge programs are suited to Young Scholars who have completed a Skills Builder program, however new students are also welcome to enrol in Grand Challenges.

The Arduino Skill Builder is suited to Young Scholars who have completed other QVSA courses and are proficient in using the virtual platform, iSee.

Course Details

| Course | Lesson Time | Course Dates | Course Context |
|--|-----------------------------|---|--|
| Skill Builder iSee Licence and Scientific Inquiry (Years 5 – 6) | Monday (8.45 – 9.50am) | Start: 1 st March End: 17 th May | Students build their ability and fluency in using the iSee virtual platform. They will collaboratively access and gain experience in using a number of other software platforms (Tinkercad, Class Notebook and Padlet). Students solve open-ended scientific inquiry problems. They develop a range of thinking strategies (critical thinking, problem solving, curiosity, creativity, collaboration and communication) that enable them to approach challenges and problems from different perspectives. |
| Grand Challenge Biomedical Engineering (Years 5 – 9) Full | Monday (9.50 – 11am) | Start: 1 st March End: 17 th May | From implantable medical devices such as pacemakers and artificial hips, to more futuristic technologies such as stem cell engineering and 3D printing of biological organs, biomedical engineering is the application of the principles and problem-solving techniques of engineering to biology and medicine. Biomedical engineers solve challenging human health issues, including those related to our aging population. Students innovate a healthcare solution for elderly people living alone and focus on mobility, monitoring and medication. |
| Grand Challenge Let it Grow (Years 5 – 9) Full | Monday (11.40 – 12.50pm) | Start: 1 st March End: 17 th May | Agriculture is the art and science of cultivating the soil, growing crops and raising livestock. Queensland covers a total area of over 1.7 million square kilometres, a total of 88.4 percent is used for agriculture and 85.9 percent is occupied by grazing. From this \$4.7 billion is made from the farming of crops, cereals, grains, fibre and sugar cane. The success of this industry is greatly determined by climate, water availability, soil type and proximity to markets. In this Let it Grow Grand Challenge, students investigate the best condition for successful germination of plants. They investigate either water availability, temperature (ambient and soil temperature), seed validity, planting depth and soil salinity. |
| Grand Challenge Plastic Revolution (Years 7 – 9) | Tuesday (8.45 – 9.50am) | Start: 2 nd March End: 18 th May | The average person eats at least 50 000 particles of microplastics a year and breathes in a similar quantity. Will we take more action against plastic use, now that it has a direct influence on our own health and wellbeing? Students learn the chemistry of plastics, ecological impacts of microplastics and the latest research on recycling/re-using plastics from James Cook University academics. |

| Course | Lesson Time | Course Dates | Course Context |
|---|-------------------------------|---|---|
| Skill Builder iSee Licence and Tropex (Years 5 – 6) | Tuesday (9.50 – 11am) | Start: 2 nd March End: 18 th May | Students build their ability and fluency in using the iSee virtual platform. They will collaboratively access and gain experience in using a number of other software platforms (Tinkercad, Class Notebook and Padlet). Students will also progress through the design thinking process to solve the issue of obesity in Australian adults and children. |
| Skill Builder iSee Licence and Scientific Inquiry (Years 5 – 6) | Tuesday (1.20 – 2.30pm) | Start: 2 nd March End: 18 th May | Students build their ability and fluency in using the iSee virtual platform. They will collaboratively access and gain experience in using a number of other software platforms (Tinkercad, Class Notebook and Padlet). Students solve open-ended scientific inquiry problems. They develop a range of thinking strategies (critical thinking, problem solving, curiosity, creativity, collaboration and communication) that enable them to approach challenges and problems from different perspectives. |
| Grand Challenge Disaster Resilience for a Changing Climate (Years 5 – 9) | Wednesday (1.20 – 2.30pm) | Start: 3 rd March End: 19 th May | Resilience is a characteristic used to describe North Queenslanders, however, with climate extremes predicted to increase, how can we prepare for the future? Through collaboration with Townsville City Council, Red Cross, Qld Reconstruction Authority, Qld Fire and Emergency Services and James Cook University, students recognise and understand hazards and risks in the NQ/FNQ regions and develop resilience/community engagement strategies for staying safe, seeking help and helping others. |
| Grand Challenge Biosecurity (Years 7 – 9) | Thursday (8.45 – 9.50am) | Start: 4 th March End: 20 th May | Biosecurity in Australia plays a critical role in reducing risk and ensuring our country remains free from the world's most severe pests and diseases. Through collaboration with James Cook University's College of Public Health, Medical and Veterinary Sciences, students will innovate methods of reducing our biosecurity risk to agriculture, environment and native flora and fauna. |
| Grand Challenge Hydro Innovation (Years 5 – 6) | Thursday (11.40 – 12.50pm) | Start: 4 th March End: 20 th May | How can we ensure there is suitable access to water for our growing world population? Students explore technologies used to improve water access for human consumption. Students will innovate solutions to provide people with access to clean, drinkable water, wherever they live. |
| Grand Challenge Off The Grid (Years 5 – 9) | Thursday (1.20 – 2.30pm) | Start: 4 th March End: 20 th May | We must move towards greater sustainability by reducing the impact of three issues: 1) fossil fuel depletion, 2) climate change due to CO ₂ emissions and 3) the increasing costs of energy and water. Students collaborate with experts from the local building industry, Townsville City Council and James Cook University to innovate solutions for sustainable housing in the Tropics. They explore sustainable design to increase the efficiency of buildings and reduce impacts on human health and the environment. |
| Skill Builder iSee Licence and Scientific Inquiry (Years 5 – 6) | Friday (9 – 10am) | Start: 5 th March End: 21 st May | Students build their ability and fluency in using the iSee virtual platform. They will collaboratively access and gain experience in using a number of other software platforms (Tinkercad, Class Notebook and Padlet). Students solve open-ended scientific inquiry problems. They develop a range of thinking strategies (critical thinking, problem solving, curiosity, creativity, collaboration and communication) that enable them to approach challenges and problems from different perspectives. |

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| Skill Builder Arduino Microcontrollers (Years 6 – 9) | Friday (9.50 – 11am) | Start: 5 th March End: 21 st May | Electronic devices have become a necessity of living in the 21 st century and they are always evolving to suit our busy lifestyles with increasing demands on technology. In this course, students learn about the purpose of microcontrollers and how electronic circuits can be created in order to interact with users and the environment. They program an Arduino microcontroller and build and create electronic circuits. Arduino kits will be supplied. |
| Skill Builder iSee Licence and Scientific Inquiry (Years 5 – 6) Full | Friday (11.40 – 12.50pm) | Start: 5 th March End: 21 st May | Students build their ability and fluency in using the iSee virtual platform. They will collaboratively access and gain experience in using a number of other software platforms (Tinkercad, Class Notebook and Padlet). Students solve open-ended scientific inquiry problems. They develop a range of thinking strategies (critical thinking, problem solving, curiosity, creativity, collaboration and communication) that enable them to approach challenges and problems from different perspectives. |

* Grand Challenge courses are subject to change

To secure student places, please nominate for Round 1 and return to Wendy Bode via email (GTF@thuringowashs.eq.edu.au) or phone 07 47 538 899 for more information.

Preferred course day and time:

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| Student Name | Student MIS ID (eg wbode1) | 2021 Year Level | Gender | Indigenous | Subject Strengths | Comments/Endorsements |
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