



WONDER OF SCIENCE

2020 ANNUAL REPORT



PROMOTING A STEM CULTURE

WELCOME

WONDER OF SCIENCE 2021 BRAND REFRESH

Logo



Abbreviated Logo



2020 – A YEAR LIKE NO OTHER!

At Wonder of Science, as so many people have said, 2020 was certainly ‘the year like no other’!

However, with the opportunity to now reflect on the year it is very gratifying to see how much our small team achieved and that our rapid response to COVID-19 meant that “STEM didn’t stop” for students in our schools. Students and teachers continued to be excited and engaged in authentic STEM inquiry as the Young Science Ambassadors ‘zoomed’ (video conferenced) their way into schools across the state. In addition, digital resources were innovated for the 2020 Virtual WoS programs and these now enhance the suite of WoS offerings to schools, as well as our capacity to extend our reach into more remote locations.

As the team now all looks forward to a new year, I am very excited to report that we will celebrate 10 years partnering with Queensland schools in 2021, and as you might have noticed we have implemented a branding refresh to begin the celebrations.

There will be some special celebration events for WoS schools, including the return of Camp Koala and the Avoid Island turtle research program through our partnership with Queensland Trust for Nature (QTFN).

Many schools have already signed on for 2021 but it’s not too late to register your interest - more information available at www.wonderofscience.com.au or email us at wonderofscience@uq.edu.au

Keep reading to learn more about the WoS impact in 2020 and how partnering with us is building a STEM culture in schools and beyond!

ROBYN BULL
DIRECTOR
WONDER OF SCIENCE



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PROMOTING A STEM CULTURE

WHERE STUDENTS UNDERSTAND THE IMPORTANCE OF STEM AND

BELIEVE THAT STEM EDUCATION AND CAREERS ARE ACCESSIBLE TO THEM

“A renewed national focus on STEM in school education is critical to ensuring that all young Australians are equipped with the necessary STEM skills and knowledge that they will need to succeed.”

National STEM School Education Strategy, 2015

STEM INQUIRY TASKS



STEM INQUIRY - CHALLENGING, REAL-WORLD TASKS ALIGNED TO THE AUSTRALIAN CURRICULUM

- The Wonder of Science challenge tasks immerse students in authentic and collaborative inquiry
- Students develop critical and creative thinking skills as they are challenged to develop a group response to a real-world problem or scenario

YOUNG SCIENCE AMBASSADORS



YOUNG SCIENCE AMBASSADORS - INSPIRATIONAL PhD RESEARCH STUDENTS ARE PASSIONATE AND KNOWLEDGEABLE STEM ROLE MODELS

- The Young Science Ambassadors support implementation of Wonder of Science, and judge presentations at the student conferences
- Teachers describe them as “bringing STEM to life” in their schools

STUDENT CONFERENCES



STUDENT CONFERENCES - ASPIRATIONAL REGIONAL AND STATE LEVEL STUDENT SHOWCASE EVENTS

- Representative teams from participating schools are invited to present their challenge task response at a one-day regional student conference
- Winning teams receive medals and a trophy for their school and are then invited to State Conference held at a university campus each year

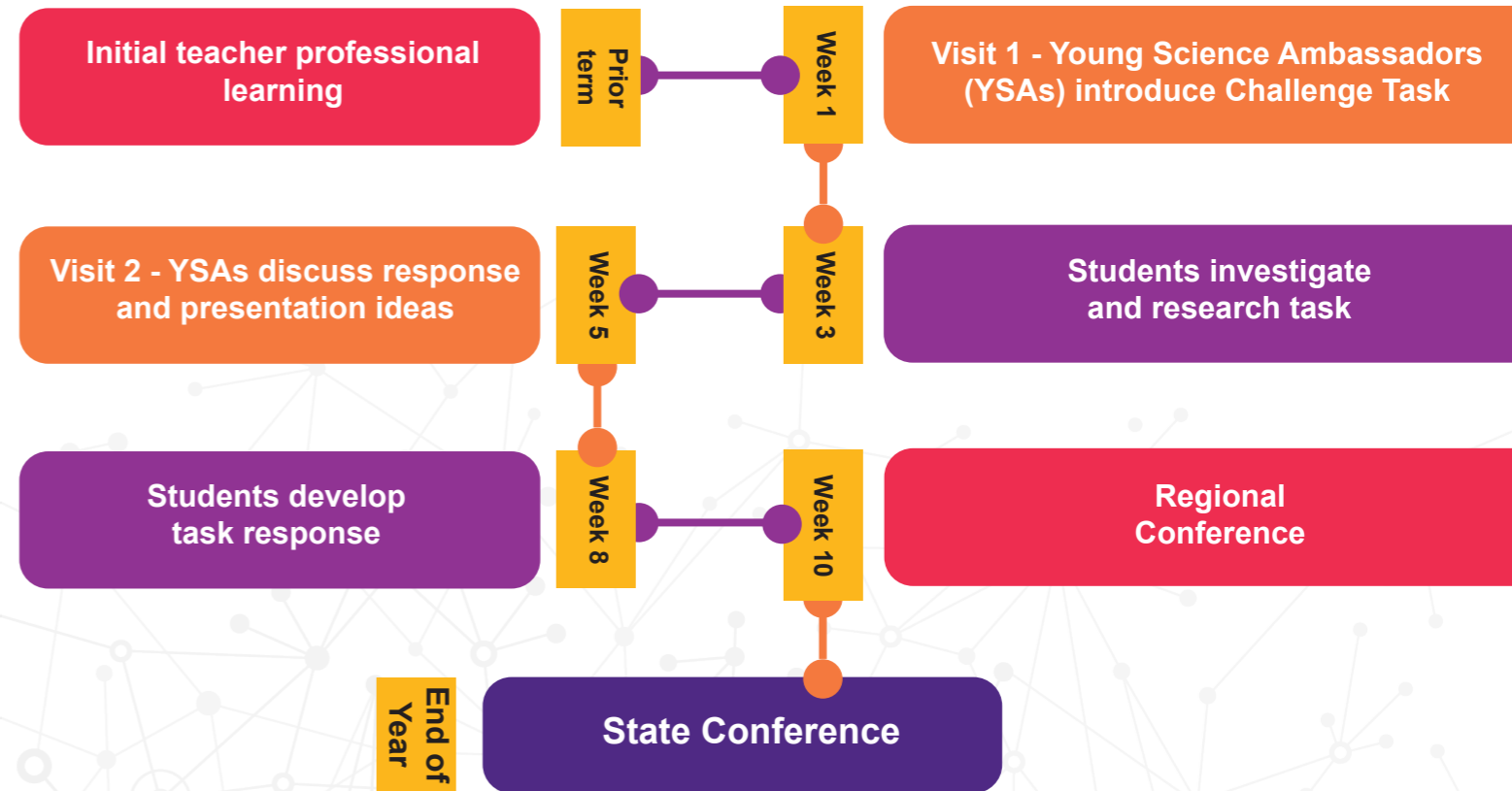
PARTNERSHIPS



STRATEGIC PARTNERSHIPS - BETWEEN SCHOOLS, UNIVERSITIES, INDUSTRY GROUPS, NON-PROFIT ORGANISATIONS & GOVERNMENT AGENCIES

- Wonder of Science fosters partnerships between schools and the wider community through our partner organisations
- Our partners support the student conferences and other STEM experiences for participating schools

TYPICAL TIMELINE FOR SCHOOL ENGAGEMENT WITH WONDER OF SCIENCE



THE WONDER OF SCIENCE APPROACH

- Promotes problem-solving skills, including critical, creative, collaborative and ethical thinking
- Develops the student capabilities required to achieve and succeed in a rapidly advancing and changing world
- Develops deep understanding of STEM concepts in students
- Supports teacher capability for quality STEM teaching and learning



St Peters Lutheran College Year 7 Champion Team - Virtual State Conference 2020

THE WONDER OF SCIENCE™ ADVANTAGE

IN-PERSON PROGRAM

The in-person program fee is \$3500 per school (for up to 6 classes) for a term – that's less than \$25 per student

1 Professional learning options for teachers: STEM Inquiry – the WoS approach

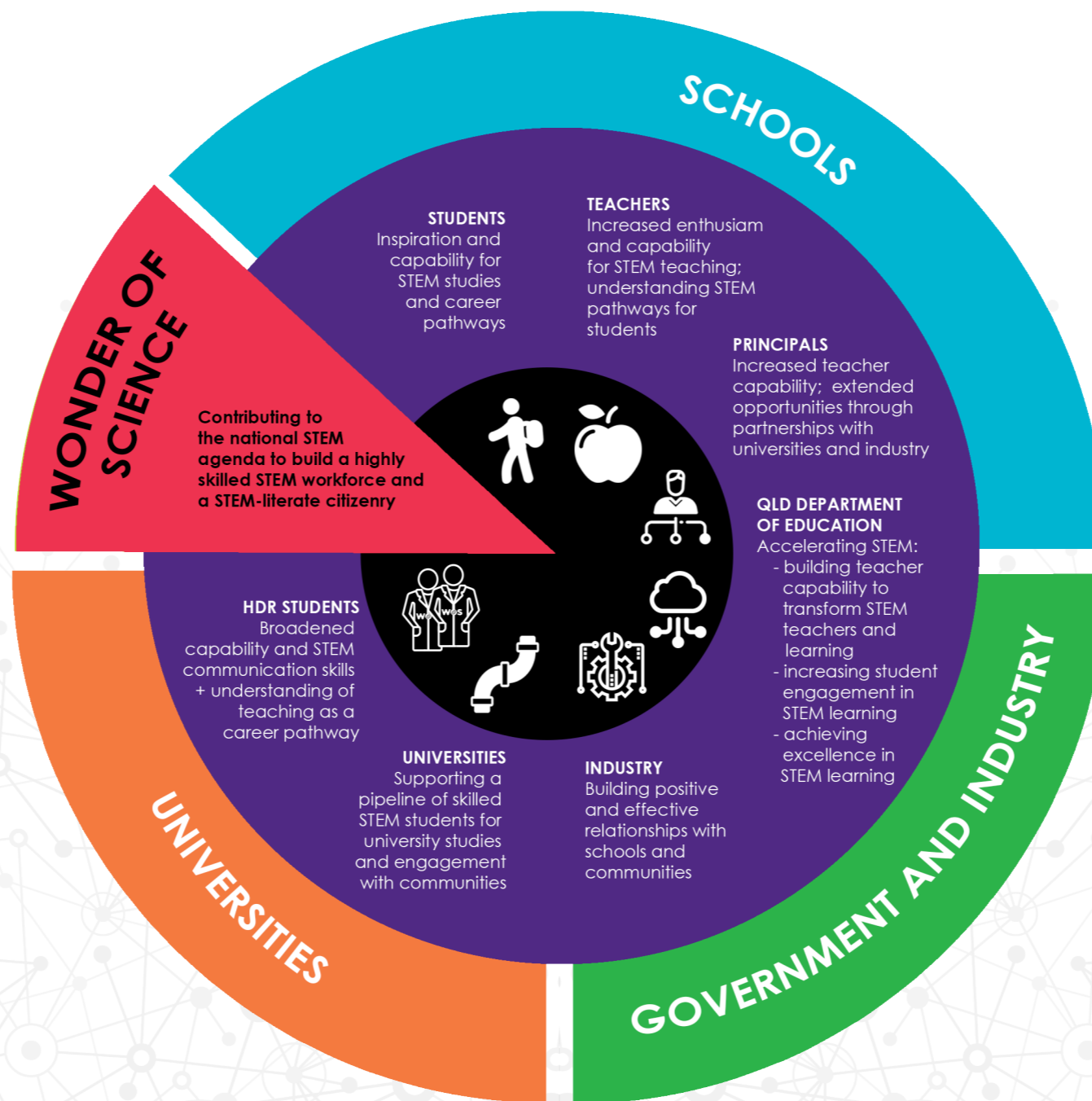
2 WoS challenge tasks, teacher unit overview, lesson plans, criteria sheets, investigation planners and Young Science Ambassador video lessons

3 Two ambassador visits (in-person) during the term

4 Attendance at a regional student conference for a representative team from each class with trophy and medals for winning teams

5 Attendance at State Conference for all regional winning teams and their teachers

6 Extended opportunities for students through our strategic partnerships – for example, university programs and QTFN's Camp Koala and Avoid Island programs



VIRTUAL PROGRAM

The virtual program fee is \$2500 per school (for up to 6 classes) for a term – that's less than \$17 per student

1 Professional learning options for teachers: STEM Inquiry – the WoS approach

2 WoS challenge tasks, teacher unit overview, lesson plans, criteria sheets, investigation planners and Young Science Ambassador video lessons

3 Two virtual ambassador visits during the term via video conferencing

4 Participation in a regional student conference via video conference for a representative team from each class with trophy and medals for winning teams

5 Participation in State Conference via video conference for all regional winning teams and their teachers

Andreea Ryalls
Head of Department - Science
Stretton State College

"Thank you so very much for all your hard work with the Wonder of Science Program. The flexibility and adaptability of the program is a testament to your tenacity! We had an absolute blast with the challenge tasks this year and we have learnt a lot!"

2020 IMPACT

This year Wonder of Science reached
8129 people
 including students, teachers, parents and community members

992
 additional students reached
 via other STEM activities -
 e.g. the Flying Scientists Program



**Virtual State Conference 2020
 Champion Team Presentations**



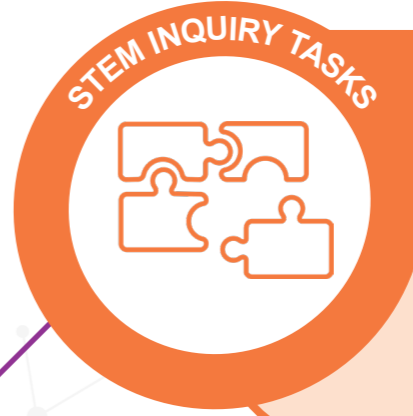
Year 5 - Kimberley Park State School



Year 6 - Stretton State College

76
 students attended
 the Virtual State
 Conference

542
 students attended a
 regional conference



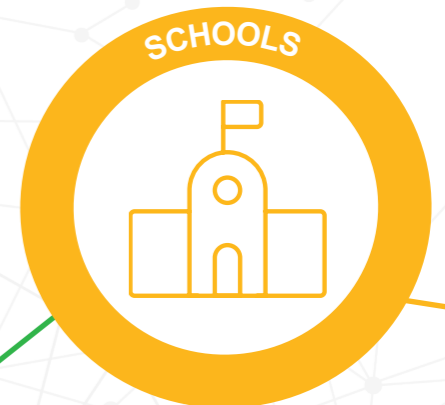
**STUDENTS IMPACTED
 THROUGH SCHOOL OR
 VIRTUAL VISITS**

3689



110
 Young Science
 Ambassadors

71%
 of Young Science
 Ambassadors are
 female

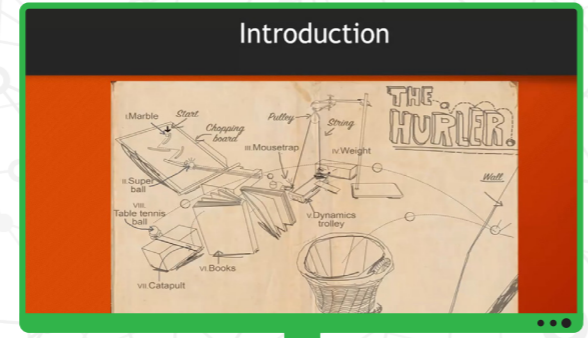


36
 schools from
 regional, remote
 and metropolitan
 Queensland

27
 are state
 schools



Year 7 - St Peters Lutheran College



Year 8 - Cairns School of Distance Education

83900
 Impressions on the Wonder of
 Science Twitter account

Material Experiment Results

Metal

- Camouflaged well with background
- No signs of hand behind it
- Surrounding light sources (sun) bounced off metal leading to 'camouflaged' look
- Reflective surface refracted light waves

Year 9 - Narangba Valley State High School



50%
 of participating
 schools are rated
 below the average
 socio-education
 advantage
 (ICSEA)¹

¹www.myschool.edu.au (2020)

YOUNG SCIENCE AMBASSADORS™

24% of Young Science Ambassadors have participated for 2 years or more

YOUNG SCIENCE AMBASSADORS

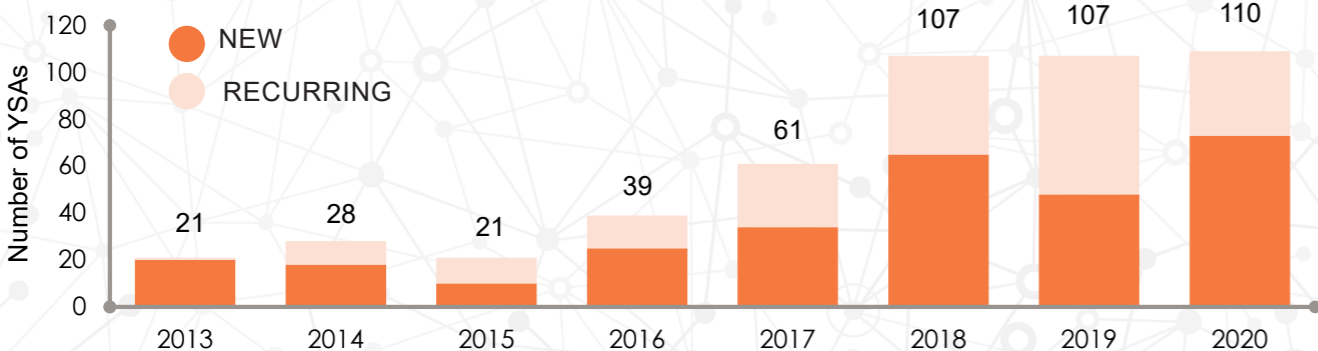
Despite the many implications of COVID-19, 2020 included continuing and heightened interest from Higher Degree Research (HDR) students for the Young Science Ambassador Program. 45 HDR students from five Queensland universities (breakdown by institution opposite page) were recruited into the program – completing virtual training and shadowing existing Ambassadors on virtual classroom visits.

59% of the 2019 Ambassadors continued in the 2020 program and 24% of the total 110 Ambassadors have been with WoS for more than two years – significantly enhancing our capacity to provide experienced and professional young scientists to schools and demonstrating the popularity of the program for HDR students. Indeed, 20 continue with WoS following completion of their PhD!

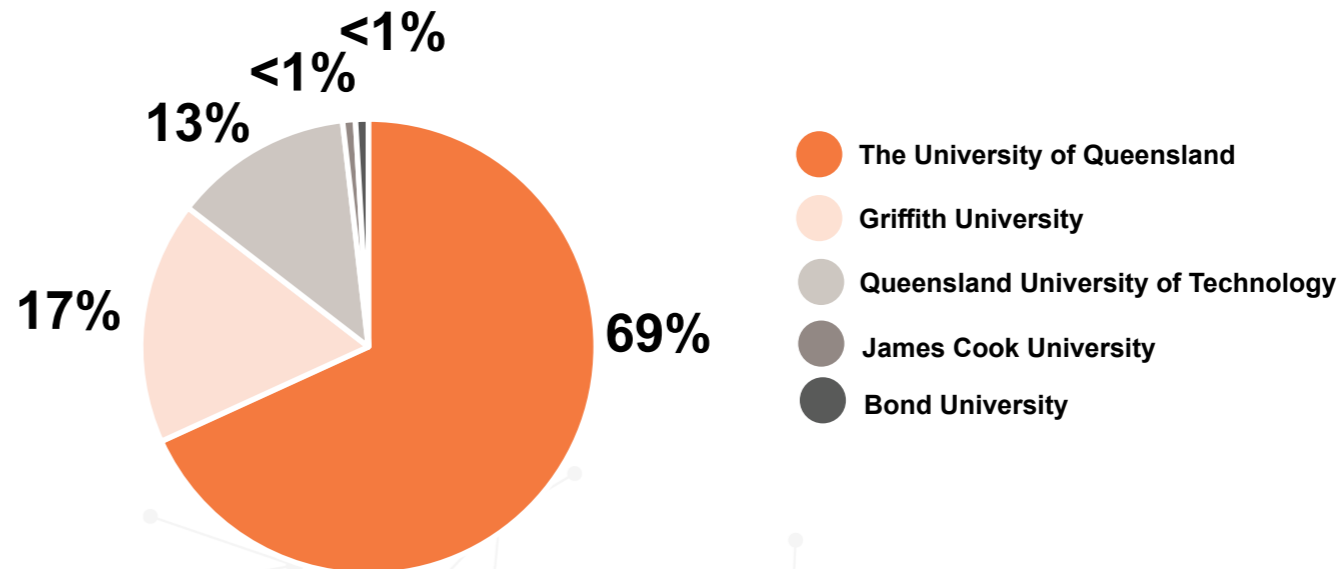
59% of 2019 YSAs returned continued in 2020

The percentage of females (71%) in the Ambassador program also remains high – over 65% for the last 4 years – demonstrating our commitment and contribution to the national Women in STEM agenda to address gender inequity in STEM.

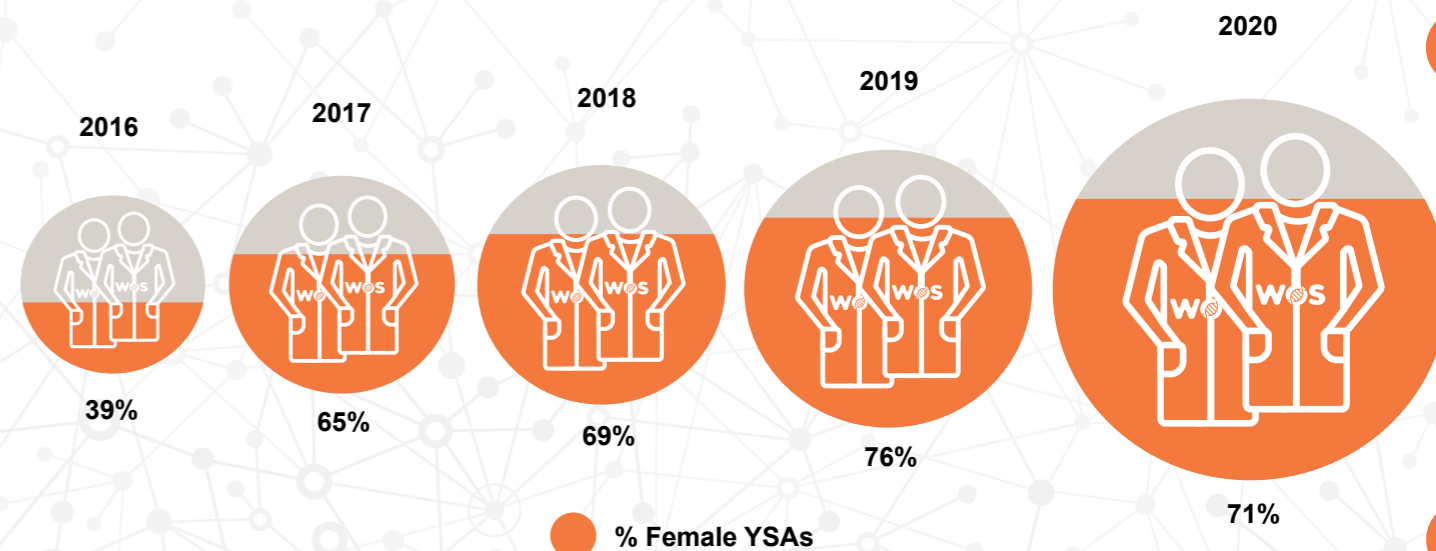
YSA RETENTION



INSTITUTION BREAKDOWN



GENDER BREAKDOWN



Joanna Rickert
STEM Teacher
Roma State College

"I just want to congratulate the YSAs on their virtual YouTube presentations - very thorough and engaging for the learners they're aimed at. The saying, "Necessity is the mother of all invention" is ringing true here! I feel like this will be a new chapter in the Wonder of Science journey. Thank you so much for these wonderful resources."



Young Science Ambassadors - Virtual State Conference 2020

Edge Hill State School:
Central/FNQ Virtual
Regional Conference



Young Science Ambassador
Virtual Lesson



Ambassador Judges:
Metro Primary
Regional Conference



Happy Valley State School:
Central/FNQ Virtual Regional Conference



Taroom State School:
Darling Downs Regional Conference



Ambassador Lead Judges State Conference



**PROMOTING
A STEM
CULTURE IN
QUEENSLAND
SCHOOLS**

WoS at the Foxwell State
Secondary College
Open Night



STUDENT CONFERENCES

542
students attended
a regional
conference

150
teams participated
in a regional
conference

70%
of students that
attended State
Conference were
female

65%
of State Conference
Champions
were female

VIRTUAL STUDENT CONFERENCES

10 regional conferences + 2 mini conferences were facilitated via predominantly Zoom video conferencing across the year. 16% of the winning teams from those conferences went on to participate in the Virtual State Conference, also provided via video conference on Friday, 27 November 2020.

Students and teachers told us they learnt a lot in dealing with technology and internet challenges enabling them to effectively participate and enjoy the conferences – as the evaluation data opposite indicates.

Well done to all participating students (and their teachers) and congratulations to the 2020 WoS State Champions – including Coby (team of one) from Cairns School of Distance Education!

THE 2020 STATE CHAMPION TEAMS

- Year 5 - Kimberley Park State School
- Year 6 - Stretton State College
- Year 7 - St Peters Lutheran College
- Year 8 - Cairns School of Distance Education
- Year 9 - Narangba Valley State High School



Spinifex State College Year 7 Teams - Mount Isa Regional Conference

Ben Cooke
Principal
Meandarra State School

"Great job on the conference this year, it was great to be involved in a year with so many things cancelled."

STUDENT CONFERENCE EVALUATIONS

91%
agree or
strongly agree that
presenting their team
project at the conference
was a valuable learning
experience

86%
agree or
strongly agree that
observing other team
presentations was
interesting and
valuable

68%
agree or
strongly agree that
they have a **GREAT**
interest in studying
STEM-related subjects in
Years 11 & 12

95% agree or strongly agree that participating in the Wonder of Science conference was an exciting and challenging opportunity

Coby
Wonder of Science Year 8 State Champion



"In 2020 I had an amazing experience competing in the Wonder of Science competition. I had so much fun presenting my experiment and learning about other participants' experiments. [Wonder of Science] has taught me a lot about presenting in front of others and how the science behind each experiment worked. All in all this was an awesome experience and I can't wait to participate again next year."

*Coby is a student at Cairns School of Distance Education (CSDE). CSDE students were unable to participate in group responses to their WoS challenge task, so Coby was our first-ever "individual" participant and State Champion.

REACH

2020 WONDER OF SCIENCE STUDENT REACH

Cluster/Region	Funding model ¹		Number of schools	Number of classes	Total students	Conference attendees			
	Funded	Fee				Name	Teachers	Students	
Darling Downs South West	●		6	Year 5	6	105	Darling Downs Primary (Year 5 and 6)	5	48
				Year 5/6	1	11			
				Year 6	7	113			
				Year 7	8	142			
				Year 8	5	92			
				Year 9	5	99			
Total			32	562	Total	7	87		
North Coast	●		4	Year 4/5	1	20	North Coast Primary (Year 5 and 6)	3	31
				Year 5/6	1	18			
				Year 6	1	9			
				Year 7	4	108			
				Year 8	3	84			
				Year 9	4	112			
Total			14	351	Total	6	87		
Metro (South)	●		3	Year 5	4	89	South-East Primary (Year 5 and 6)	2	29
				Year 6	2	51			
				Year 9	1	21			
				Total	7	161			
Brisbane Metro	●		8	Year 3	8	160	Metro Primary (Year 3)	8	64
				Year 4	1	25			
				Year 5	1	25			
				Year 6	9	241			
				Year 7	26	606			
				Year 8	4	102			
				Year 9	3	74			
Total			52	1233	Total	21	224		



Bundaberg State High School students - North Coast Virtual Regional Conference

Markus Honnef
Head of Department - Science
Cairns School of Distance Education

"Congratulations WoS team for organising a wonderful opportunity for our students at CSDE. With your efforts through WoS their lives have been enriched and the teachers have been inspired to extend their students. I'm of course super excited with the outcome and so proud of the students."

Even with COVID-19 pandemic restrictions limiting our capacity, Wonder of Science still impacted over 8000 people across Queensland in 2020!

Cluster/Region	Funding model ¹		Number of schools	Number of classes	Total students	Conference attendees			
	Funded	Fee				Name	Teachers	Students	
Lockyer		●	2	Year 7	7	140	Participated in Metro Virtual Regional Conferences		
				Year 8	7	140			
				Year 9	1	20			
				Total	15	300			
Mount Isa		●	3	Year 5	2	56	Central/Isa Primary (Year 5 and 6)	5	47
				Year 6	3	69			
				Year 7	9	211			
				Year 9	1	3			
Total			15	339	Total	2	29		
Far North Queensland	●		5	Year 6	1	26	Far North Queensland Secondary (Year 8 and 9)	8	41
				Year 7	2	52			
				Year 8	8	138			
				Year 9	12	229			
Total			23	445	Total	3	27		
Central Queensland	●		5	Year 3	2	38	Central/Isa Secondary (Year 7)	3	27
				Year 5	2	50			
				Year 6	4	98			
				Year 7	2	56			
				Year 8	1	28			
				Year 9	1	28			
Total			12	298	Total	16	115		
Total in WoS STEM inquiry program			36	170	3689	Conference	52	542	
Additional school visits (Flying Scientists)			6	Years 1 - 12	9	274	N/A		
Additional reach through other STEM activities (Prep - Year 12)					718	N/A			
Total			42	179	4681	Conference	52	542	

FLYING SCIENTISTS

The Flying Scientists Program provides access to some of Queensland's leading scientists for regional and remote communities. The Flying Scientists are building Queensland awareness and understanding of the incredible cutting-edge research happening right here in our state.

2020 highlighted the importance of enhancing community engagement with science and the scientific community empowering our citizens to make well-informed decisions about their health, as well as that of others and the planet. The Flying Scientists are looking forward to continuing this exciting work across Queensland in 2021!



Professor Hugh Possingham
Queensland Chief Scientist

"The Flying Scientists Program provides a unique opportunity for students in remote and regional parts of Queensland to meet, speak with, and learn from enthusiastic young scientists in a fun and entertaining way. For many young people science is an intangible concept and meeting a scientist helps them learn how scientists work, what future study they may want to consider, and the career options available. The Flying Scientists also help students develop an appreciation for logical thinking skills, knowledge-based decision making, and a better understanding of how science improves the lives of everyday Queenslanders."

2020 FLYING SCIENTIST EVENTS

Date	Location	Flying Scientist	Number of Students	Other attendees	Number of Classes	Total participants
Monday 17 August	Spinifex State College, Mt Isa	Jyotsna Barta, Michela Mitchell and Kate Helmstedt	15	1	2	17
Wednesday 19 August	Happy Valley State School, Mt Isa (Year 6)	Derek Long	57	2	2	59
Thursday 20 August	Cairns School of Distance Education	Michela Mitchell, Shaneel Chandra, Catherine Kim and Linlin Ma	32	16	NA	48
Friday 21 August	Happy Valley State School, Mt Isa (Year 1)	Bronwyn Smithies	70	3	3	73
Friday 21 August	St Brendan's College, Yeppoon	Jyotsna Batra, Jennifer Gunter and Carolyn Jacobs	100	4	3	103
Saturday 22 August	Gympie STEM Hub	Kaylene Butler	NA	16	NA	16
6 events	Total National Science Week	11 Scientists	274	42	10	316
28 – 29 February	Chinchilla – World Science Festival	Dr Maryam Shirmohammadi				3370
7 events	Totals	12 Scientists	274	42	10	3686

Scan to check out the Flying Scientists YouTube playlist!



<https://bit.ly/3ktAYat>



2020 FLYING SCIENTIST VIDEOS

Title	Flying Scientist
<i>Virtual Flying Scientist Promo</i>	Bonnie Quigley, Andreas Kupz, Ben Allen, Michela Mitchell
<i>Flying Scientists - Investigating Viruses</i>	Bonnie Quigley, Andreas Kupz, Ben Allen, Michela Mitchell
<i>Flying Scientists respond to burning science questions</i>	Michela Mitchell, Ben Allen, Carolyn Jacobs
<i>Flying Scientists respond to burning Marine Science questions</i>	Michela Mitchell, Laura Blamey
<i>Flying Scientists respond to burning Physics questions</i>	Carolyn Jacobs
<i>Flying Scientists respond to burning Environmental Science questions</i>	Michela Mitchell
6 videos	6 Scientists



Flying Scientists Induction Session

SUMMARY

Once again, Wonder of Science continued their impressive work positively impacting students and teachers, as well as the broader community across Queensland – as they pivoted to produce and implement virtual programs and online resources in response to the COVID-19 disruptions of 2020. We were so impressed with their efforts that we awarded them a ‘Love Your Work’ Award as part of the UQ Research and Innovation Portfolio Awards for 2020 – photo opposite.

Through the efforts of this small team, over 100 Young Science Ambassadors continued to support authentic STEM inquiry in classrooms, helping to inspire the next generation of scientists and STEM professionals that are vital for our future. 2020 certainly demonstrated the importance of STEM and highlighted how scientific research is fundamental to a safe and secure future for our communities. Congratulations, Wonder of Science - I can't wait to see what 2021 brings and I look forward to helping you celebrate '10 Years partnering with Queensland schools'!

Professor Bronwyn Harch
Deputy Vice-Chancellor (Research) and Vice-President (Research), BEnvSc(Hons) Griff., BEd QUT, PhD Qld., FTSE, FQAAS, GAICD

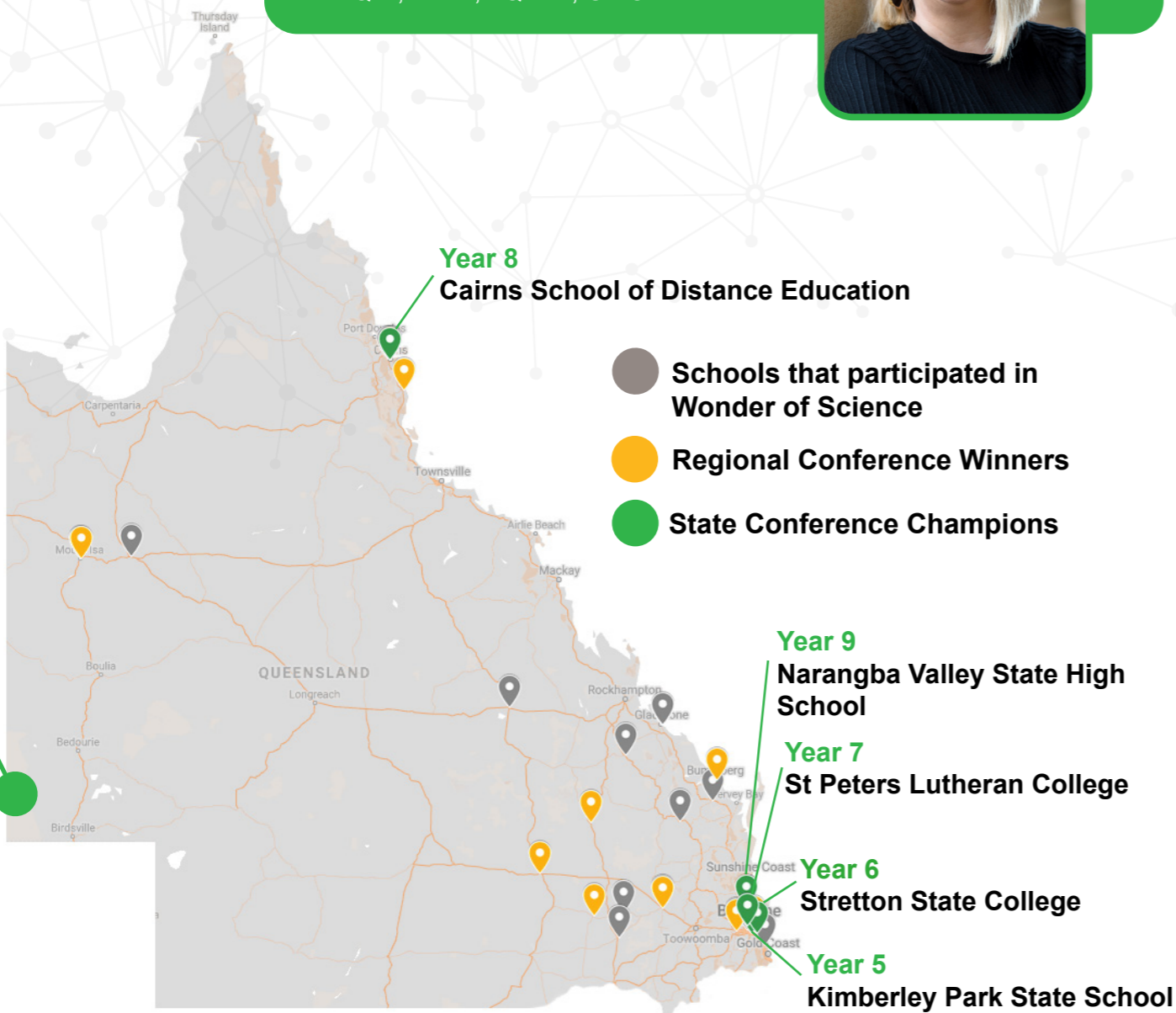


FINANCIAL OVERVIEW 2020

Income (\$'000)	
Partner contributions	155
Ambassador funding (all universities)	120
The University of Queensland additional contribution*	95
Queensland Department of Education	150
Advance Queensland (Flying Scientists Program)	30
School participation fees	50
Total	600
*support for salaries and program delivery	
Expenditure (\$'000)	
Staff salaries	435
Programs delivery cost	28
Young Science Ambassador award payments	49
State Conference cost	1
Total	513
Operating result	87
Committed forward 2021	357
2020 BALANCE	444

*The University of Queensland provides additional in-kind support to host Wonder of Science and support the team.

The Wonder of Science team was privileged to be awarded the 2020 UQ Research and Innovation Portfolio “Love your work!” Award for their work providing opportunities for higher degree research students to engage in a meaningful way with schools and broader community; and their fast response enabling the program to continue in a meaningful way despite the ongoing COVID-19 situation. This is the second consecutive year that Wonder of Science has received a UQ Research and Innovation Portfolio Award having received the team “Impact Award” in 2019.



Professor Bronwyn Harch presenting the WoS Team with the Research and Innovation Portfolio “Love your work!” Award



PARTNERS

Wonder of Science would not be possible without our valued partners - thank you to all!



PARTNER WITH US

We welcome organisations, philanthropic foundations, universities, and other STEM agencies as partners.

For further information, please contact:
Robyn Bull, Wonder of Science Director

CONTACT



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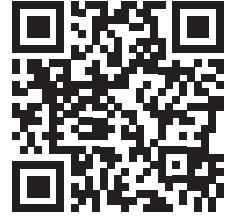
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