



Queensland University of Technology
Brisbane Australia

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[Lightbody, Ian & Rueckert, Caroline](#)
(2022)

Development of STEM support at QUT: Strategy, students, and an integrated model.

In *STARS Conference Proceedings 2022*.

Unistars, Australia.

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<https://unistars.org/papers/STARS2022/P13-POSTER.pdf>

Development of STEM support at QUT: Strategy, students and a curriculum-aligned model



Mr Ian Lightbody
Dr Caroline Rueckert
Teaching and Learning Unit,
Queensland University of Technology
ian.lightbody@qut.edu.au

CRICOS No 00213J

Overview

The Queensland University of Technology (QUT) uses a multi-faceted approach to STEM support for learning. In the past few years, QUT has significantly built its service ecology. Services have matured to be highly scalable, more curriculum embedded, and responsive to external factors, notably the impact of the COVID-19 pandemic and severe weather events.

What has changed?

- **STEM Academic Preparedness Workshops** were introduced in 2021 to assist commencing students to understand some assumed knowledge, build confidence and connect them to academic support to be successful in their studies. The workshops have been well-attended and well-received with positive feedback.
- **Building and maintaining partnerships** with faculty staff, divisional partners (e.g. Library, disability services, the Oodgeroo Unit, student groups and clubs, and the Student Guild) to provide mutually-beneficial outcomes for all.
- **Coordinated communications strategy** to raise student (and staff) awareness, participation and engagement in the ecology of support.
- **Development of the STEM ecology of support**, including:
 - **Curriculum-aligned workshops** to provide highly-scalable support for identified needs in specific units.
 - **Online and on-campus options** for STEM support, particularly in response to the impact of COVID-19.
 - **Improvements to the peer support model**, including greater visibility of the drop-in support options (e.g. peer support roster <https://stimulate.qut.edu.au>)
 - **Learning resources with purpose**, such as self-diagnostic tools to identify strengths and weaknesses, and to provide bespoke support options, as required.

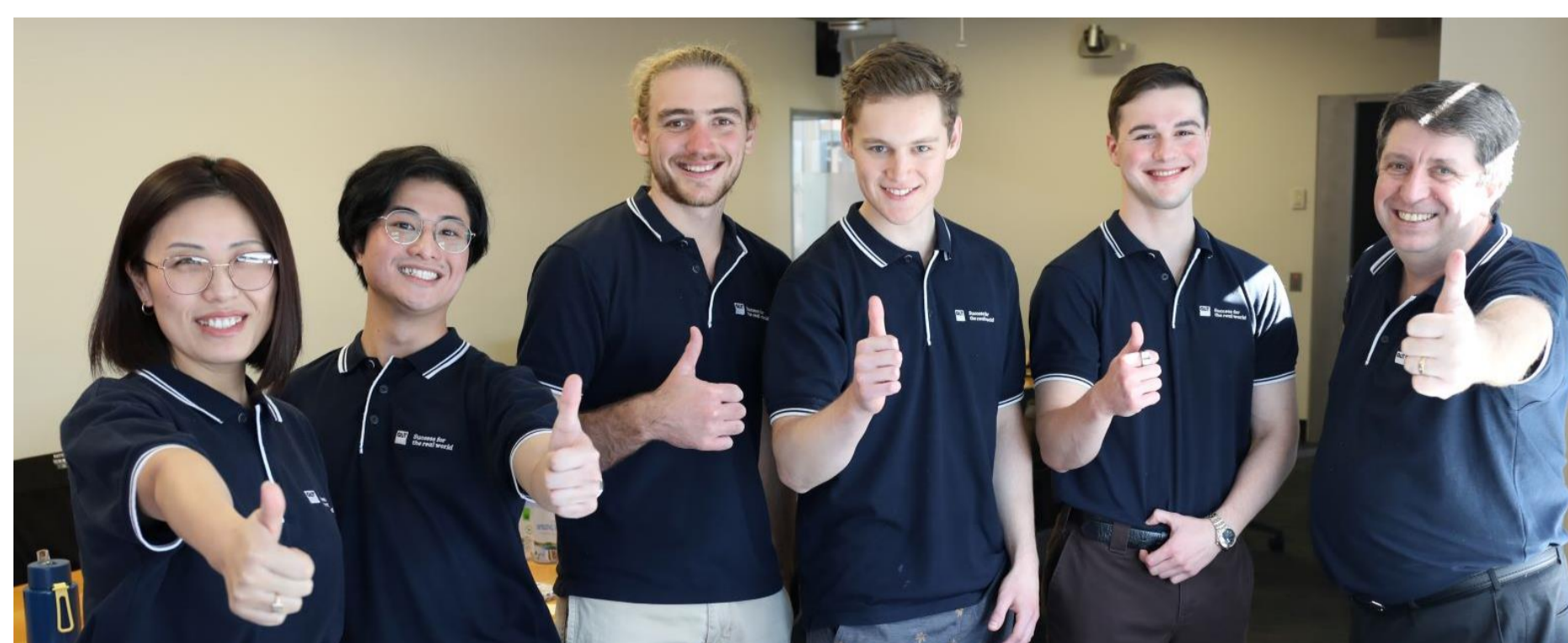


Photo: A new initiative – **STEM Peer Advisors** – supporting students and volunteer peer leaders on campus and online; a contributing factor to the 88% increase in STEM peer support in 2022.

<h3 style="text-align: center;">Strategy</h3> <ul style="list-style-type: none"> • Partnerships with faculties and divisions: working collaboratively to design support to meet student needs and provide timely feedback on services • Centrally coordinated: responding to common student needs and providing strategic direction • Faculty-embedded: collaborative and deep working relationships with faculty staff and students • Social justice framework: incorporating the student voice in service design and delivery, equity, and aiming to ensure access for all 	<h3 style="text-align: center;">Students</h3> <ul style="list-style-type: none"> • Student-centred support: addressing student needs, including STEM peer support • Students as partners approach: working with students for students to co-design and deliver STEM support • Strengths-based approaches (not deficit approaches) used, incorporating a growth mindset and positive psychology
<h3 style="text-align: center;">Curriculum-aligned</h3> <ul style="list-style-type: none"> • Curriculum-embedded and aligned support: through curriculum mapping to ensure relevance and timeliness of support • Co-designed with faculty and students: to ensure services are relevant, timely and useful • Coordinated with curriculum-related teaching and learning activities, including course review and re-accreditation, course-aligned peer programs and student clubs 	<h3 style="text-align: center;">Ecology of support</h3> <ul style="list-style-type: none"> • No wrong doors to reduce student frustration and improve the student experience • Multi-faceted and multi-modal support: accommodating different learner needs, access, and preferences • Smooth handoffs to other support providers • Spectrum of student support from individualised support for high- and complex needs, to highly scalable support for common academic needs.

Theoretical basis

The QUT STEM support model is underpinned by relevant theory. Adult learning principles developed by Knowles (1968) and subsequent work by Garrison (1997) on self-directed learning approaches, form the basis of the student-centred approach to facilitate learning (not re-teach) and develop independent learners. Furthermore, applying high-impact practices and providing conducive conditions described by Kuh (2005, 2008) to enable student success resonates with QUT STEM Support services. First-year experience (Nelson et al., 2012, 2013) and student success (Kahu & Nelson, 2018) literature has contributed to a concerted effort at addressing student needs and improving the student experience at QUT.

What 5 students (out of 8453) have said:

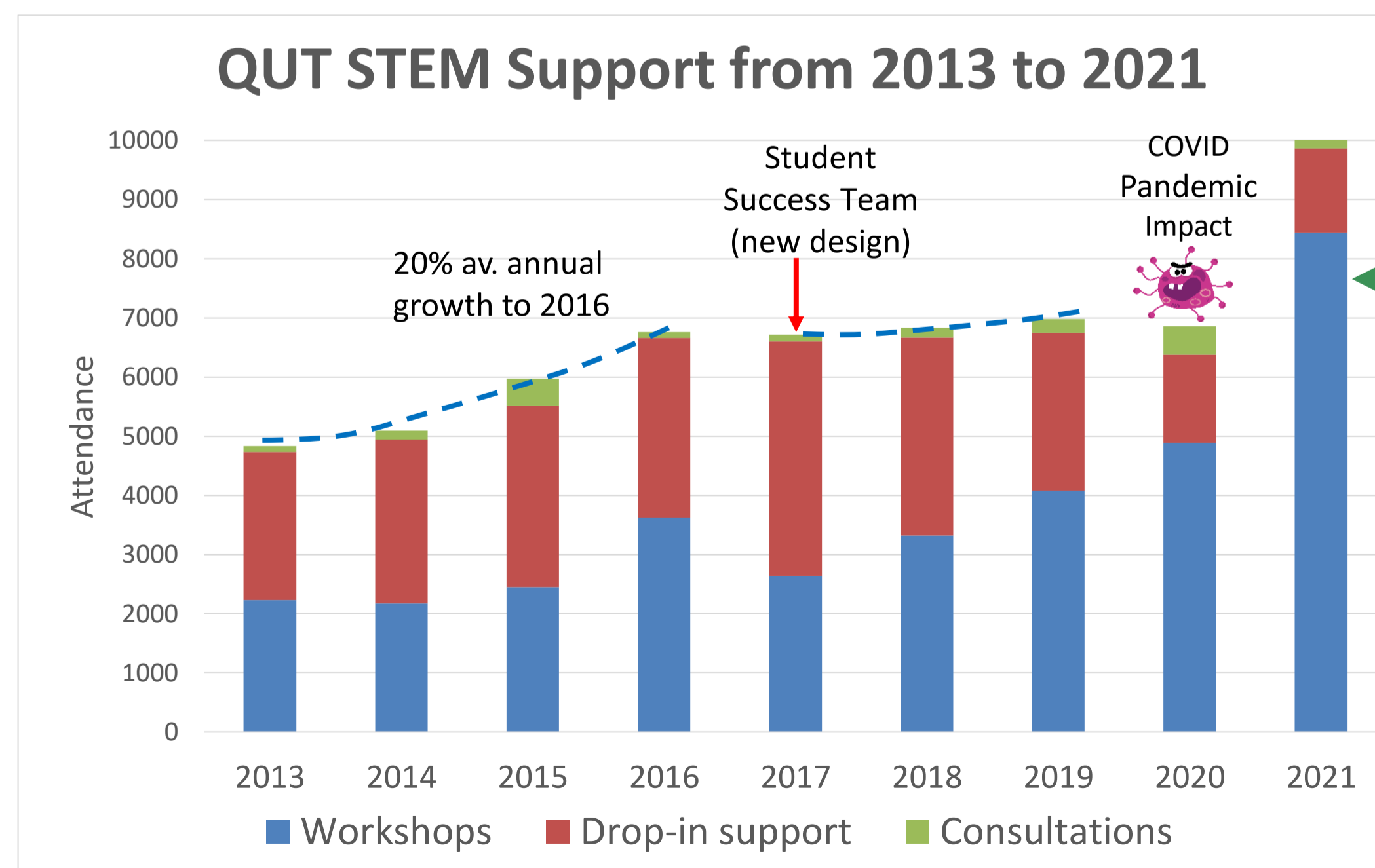
Very helpful and friendly. I am glad that I was able to get assistance today

He helped me understand the coding and provided me a better understanding of python. I wouldn't have successfully accomplished my objective without his assistance. Thanks for the support.

You didn't solve the problem for me, but you taught me different methods of approaching the problem, which was very helpful for my learning. Thanks!

Brilliant help was given..... thoroughly understood the topic which I had issues with. Would recommend to a friend.

Very helpful and drastically improved understanding.



2021 Growth

- Recovery from COVID-19 pandemic
- Student needs for support are greater than ever due to disrupted learning, especially COVID-19
- STEM peer support was limited by reduced availability of peer leaders
- STEM Educators increase workshops for targeted cohorts
- Introduction of STEM Academic Preparedness Workshops for commencing students but open to all students
- Workshops scaled up to offset the reduction in STEM peer support due to COVID