



# STIMulate

## Out-of-Class Mathematics Support for Engineering Students

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Queensland University of Technology (QUT)

# Why



STIMulate's **mission** is to help **students** achieve **success** in maths, science and IT **across QUT.**

# What

- Peer learning support community
- Self-defined “success”
- Normalising help-seeking behaviour



# Who

For any of QUT's 40,000+  
coursework students

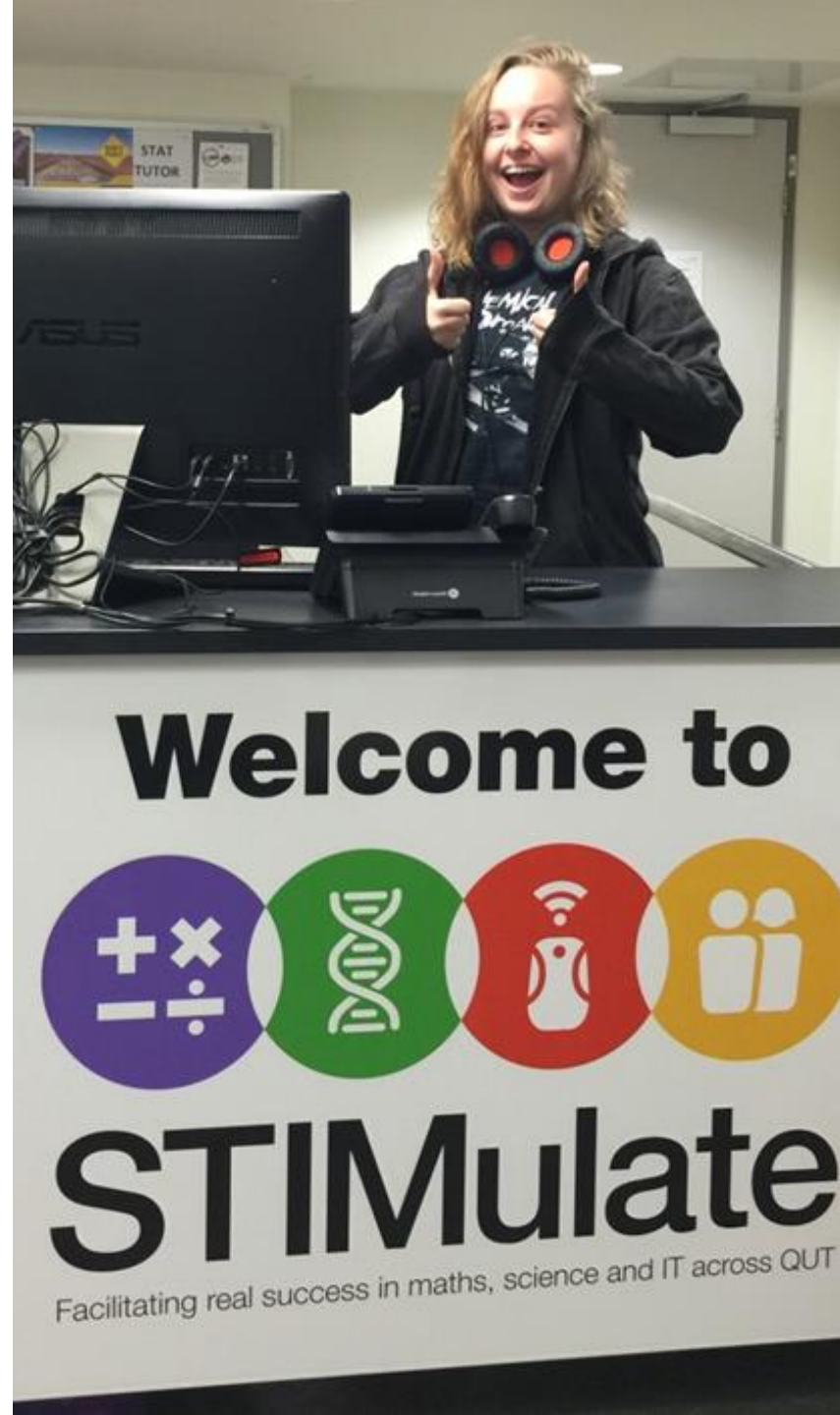


170 student volunteers  
**Peer Learning Facilitators  
(PLFs)**

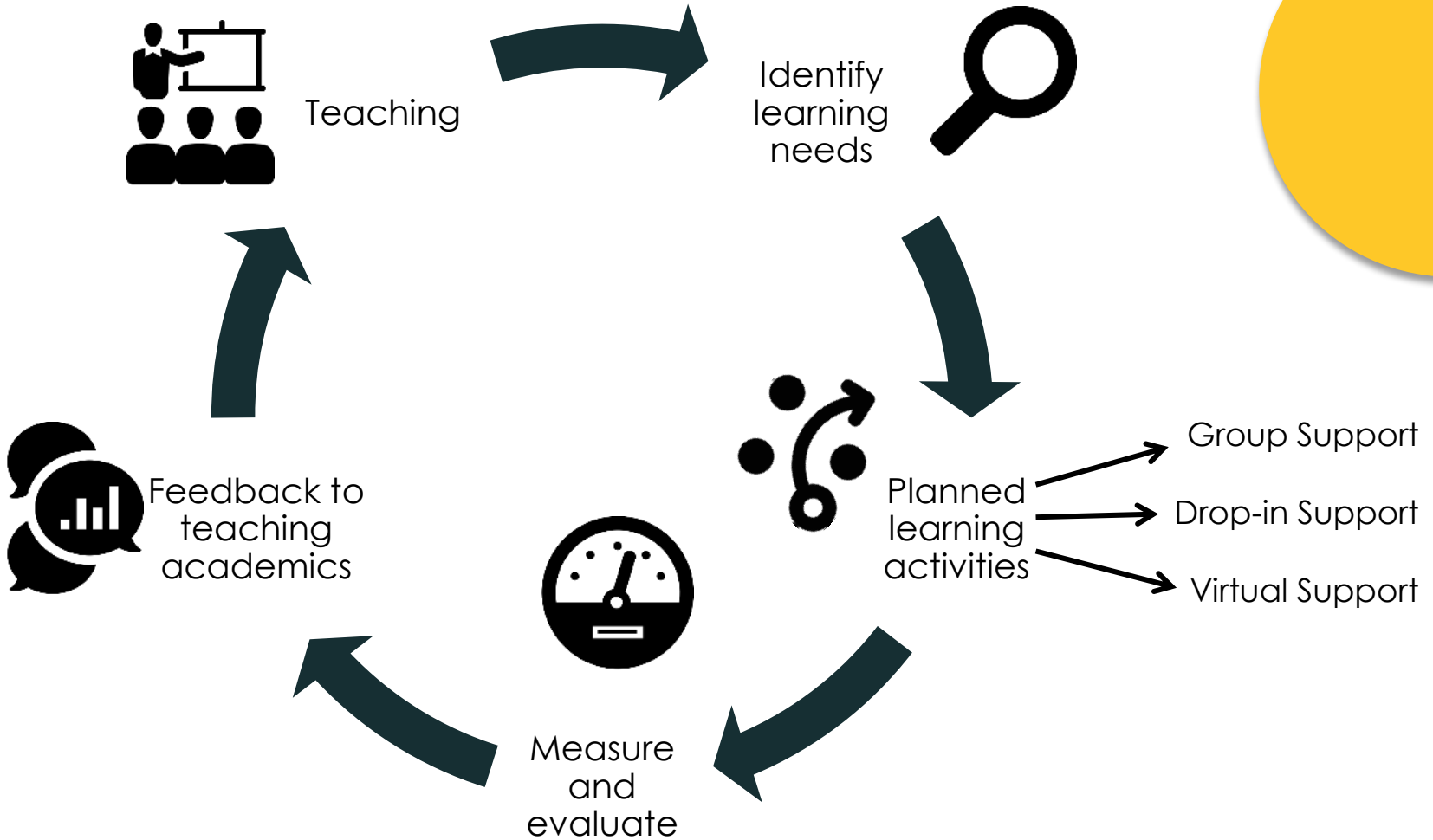
9 academic staff



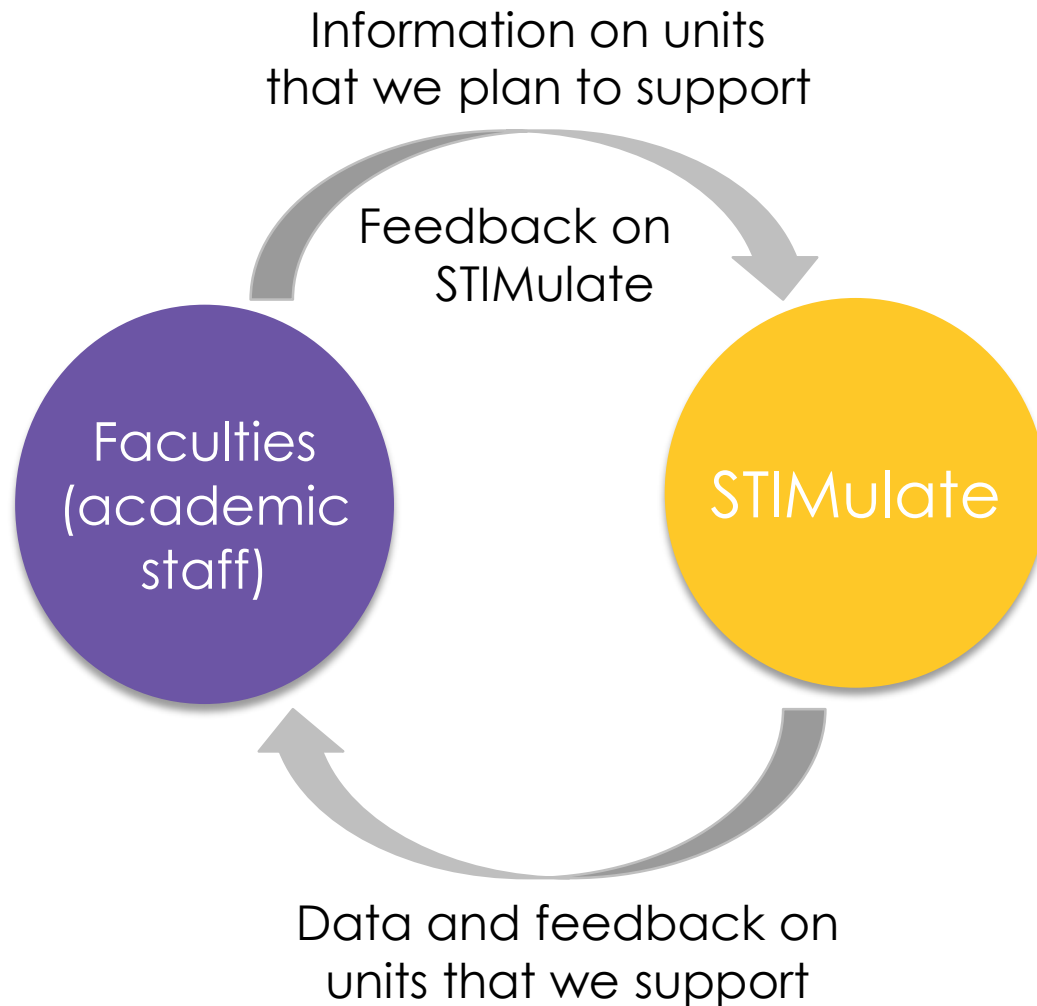
2 professional staff



# How

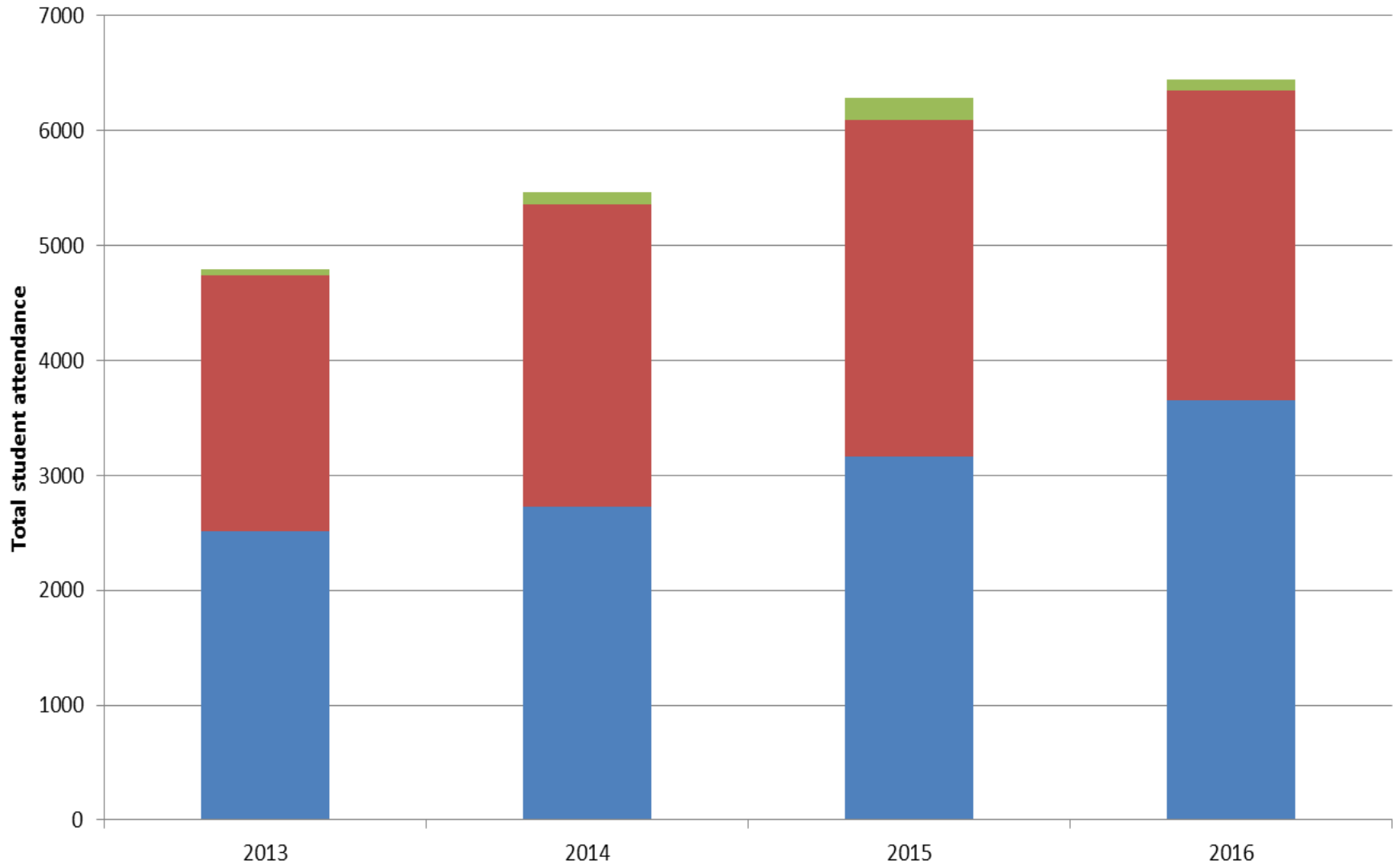


# Relationships with Teaching Academics



## 2013-2016 STIMulate Student Attendance

Drop-in support    Group support    Virtual support




# Unit Mapping for Engineering Mathematics



News update for PLFs

Weekly Update - PLF Newsletter
Semester 2, 2016
Newsletter 2: Week 7

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## STIMULATE | MATHS

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Hi Maths PLFs!

We hope that the semester is progressing well for all of you. As usual, O304 has been buzzing with activity, and it is refreshing to see the happy faces of students who leave O304 with clearer minds and lighter hearts after

## What is happening in maths?

Unit Code	Unit Title	Week 2		Week 3		Week 4		
		Content	Plan	Content	Plan	Content	Assessment	Plan
MAB141	Maths & Statistics for Medical Science	Maths: Analysis of Curves	group support session	Maths: Applications of Calculus	group support session; Worksheet 141.3	Stats: Collecting and Recording Data	Assignment 10%	group support session; Worksheet 141.4
MXB100	Linear Algebra and Differential Equations	Matrices and their applications - part 2	group support session; Worksheet 100.2	Vectors and vector algebra - part 1	group support session; Worksheets 100.3a,b,c	vectors and vector algebra - part 2	Quiz 1 10%	group support session
MXB101	Probability and Stochastic Modelling I	Events and probability and conditional probability	group support session; Worksheet 101.2	Conditional probability, law of total probability and Bayes' theorem	group support session; Worksheet 101.3	Conditional probability, law of total probability, Bayes' theorem, random variables and distributions	Assignment 1	group support session; Worksheet 101.4



# Traffic Light System



1. **No assistance** – actually, we never provide ‘no assistance’. Assistance with very general learning skills.
2. **Limited assistance** – the default position. What have you tried so far? Here is a similar problem ...
3. **Facilitated learning** – we almost never tell students an answer to a question, especially with assessment.

# Drop-in Visits by Engineering Students

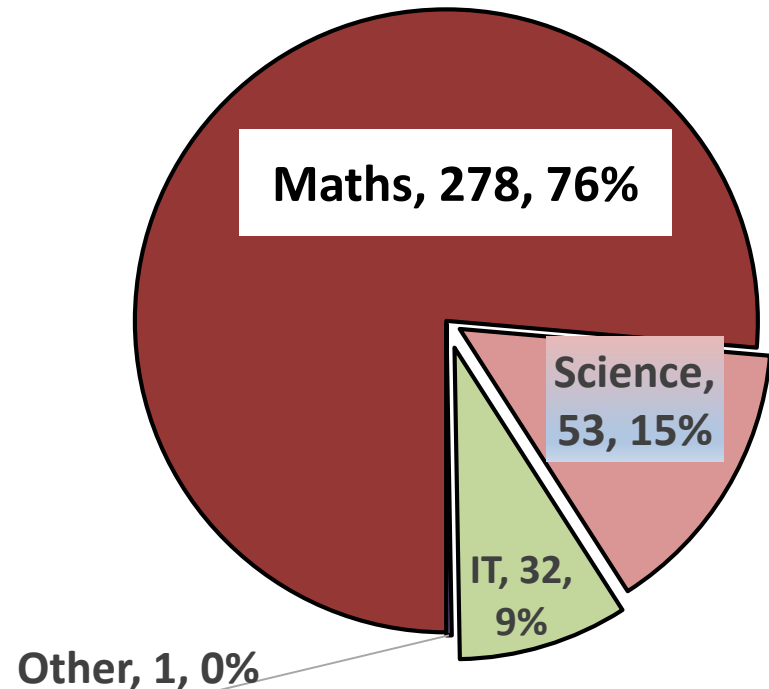
Semester 2 2016

2.79 visits per student


488 Engineering visits  
(30% of all visits)

175 Engineering students  
(29% of all students)

STIMulate Assistance  
(by subject matter)  
for Engineering Students  
Semester 2 2016



# Common Engineering Student Support Topics

- Computational maths
  - Differential equations
  - Calculus
  - Statistics
  - Programming (C, C# and Python)
  - Matlab
  - Dynamics
  - Electronic design
- 

# Learning Facilitation, (Not Tutoring)

STIMulate support:

- Not compulsory
- Timely (at point of need)
- Eschews a dependent learning approach
- Values independent learning
- Promotes the virtues of interdependent learning

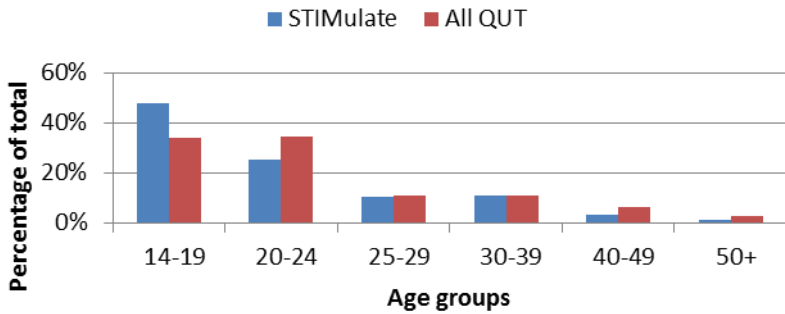
*“ You didn’t solve the problem for me, but you taught me different methods of approaching the problem, which was very helpful for learning. Thanks! ”*

Unsolicited student feedback left on  
STIMulate’s registration system 24 Aug 2016

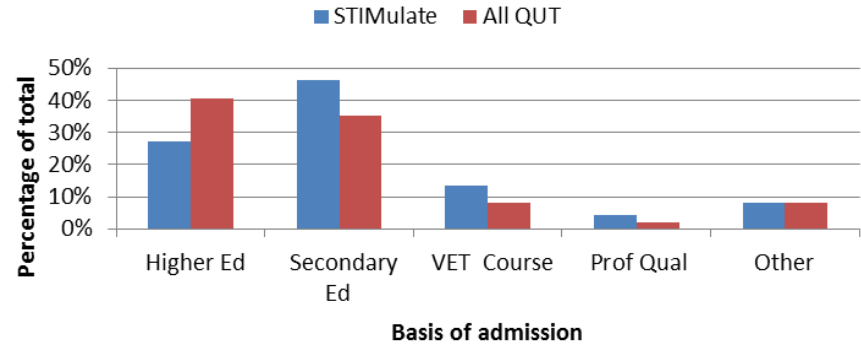
# STIMulate Client Profile



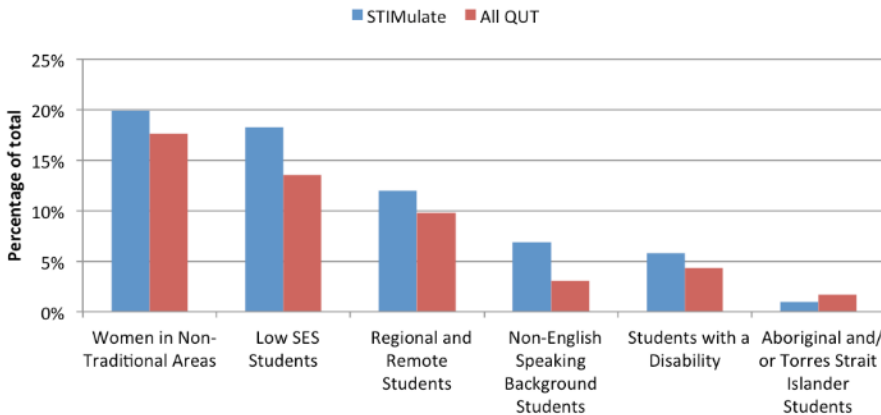
**2016 Age Groups  
STIMulate and All QUT**



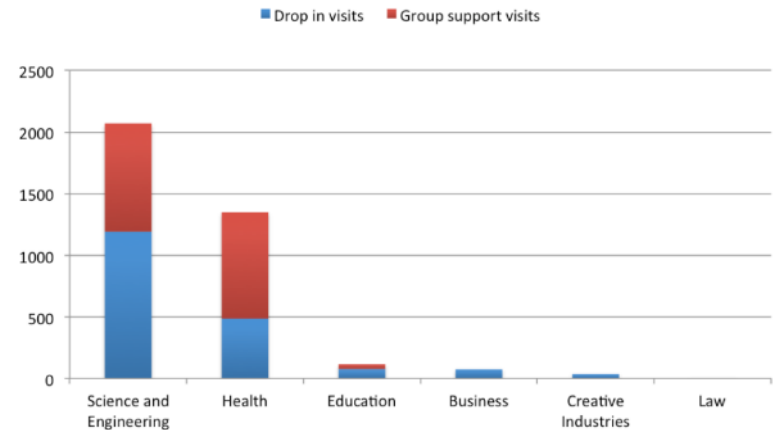
**2016 Basis of Admission  
STIMulate and All QUT**



**2016 Equity Groups - STIMulate vs All QUT**



**Student Visits by Faculty  
Semester 1, 2016**



# Student Motivation to Volunteer

Intrinsic motivators	Extrinsic motivators
<p>Internal drive to:</p> <ul style="list-style-type: none"><li>• reinforce knowledge and understand</li><li>• enhance the learning process</li></ul>	<ul style="list-style-type: none"><li>• External incentives (rewards)</li><li>• recognition by peers and academic staff</li><li>• professional development and leadership opportunities</li><li>• Enhancement of career opportunities (CVs and references)</li></ul>
<p>Predominant driver of participation in volunteer roles</p>	<p>Important to recognise and reward volunteers</p>

Devine, C., Brady, J., Moody, H., Wilson, T., Liu, Y., Medland, R., Gamlath, S., Herath, D., Dyson, E., Tredinnick, J., Lightbody, I. (2016). [Why volunteer? : what STIMulates Involvement in a STEM peer learning facilitation program?](#) *Australian Conference on Science and Mathematics Education*, 28-30 September, Brisbane.

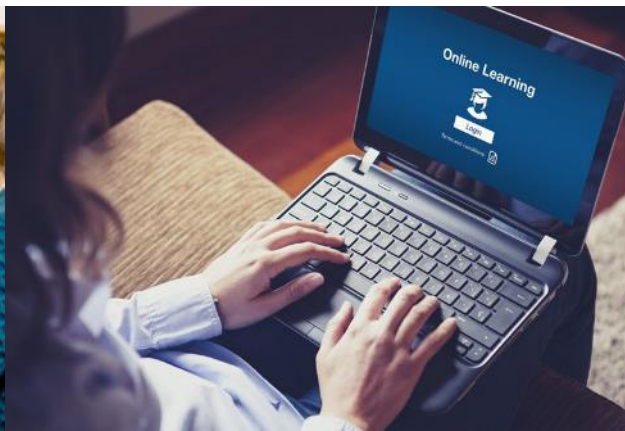
# Service Governance

- Student Involvement - Student Leadership  
Student Executive
- Operates with an Advisory Committee  
Senior representation (drawn across QUT)
- Funded by Student Services Amenity Fee (SSAF)
- Coordinated through Library (will change in 2017)
- STIMulate Academic Staff  
Faculty-based supervisors



# Plans for the Near Future

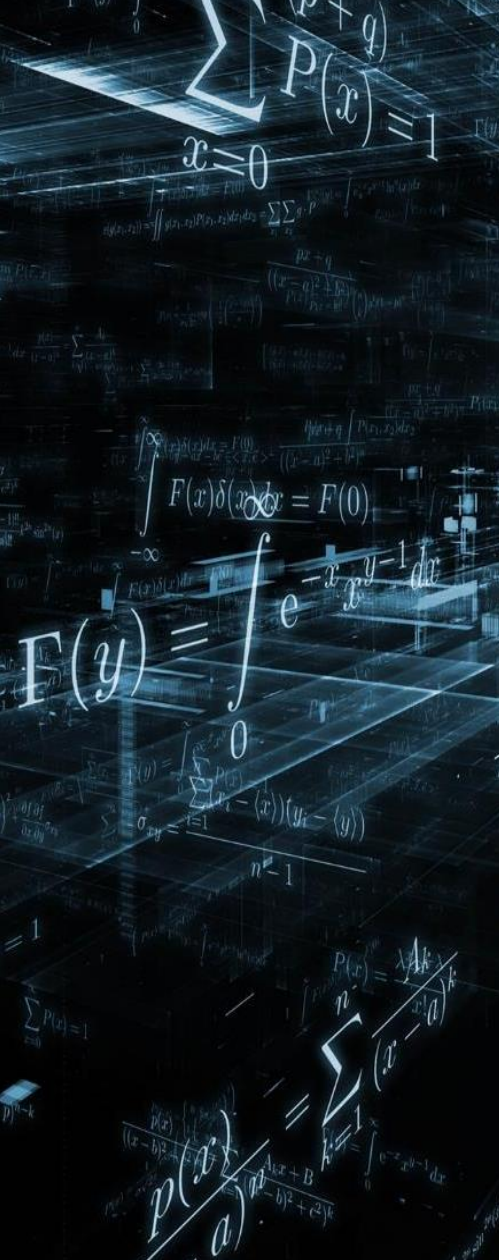
- Custom built online rostering system
- Student designed support videos
- Increasing online presence to better support off-campus and part-time study
- Scaling the program to meet growing demand





Video





# Out-of-Class Mathematics Support for Engineering Students

# STIMulate

Facilitating real success in maths, science and IT across QUT

## Questions Please

*Presented by*

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QUT Library

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