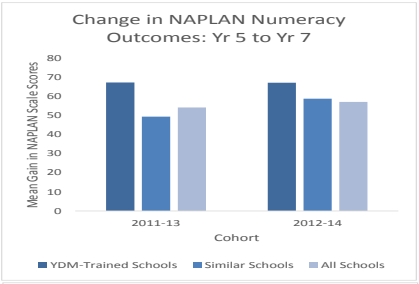
YUMI DEADLY CENTRE (YDC) PROGRAMS

YuMi Deadly Maths: Quality Mathematics Teaching

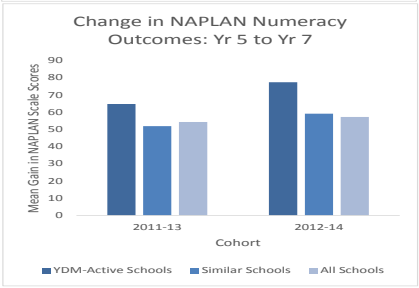
1. FOR ALL STUDENTS

Longitudinal analysis of data 2010–2015 concerning NAPLAN performance of schools trained in YuMi Deadly Mathematics has shown the following.



(a) YuMi Deadly Mathematics trained schools have significant improvement in NAPLAN across Years 3 to 7 in relation to similar schools and all schools. The example on right shows gains of 36.16% and 14.26% for Years 5 to 7 from 2011–13 and 2012–14 respectively.

(b) YuMi Deadly Mathematics trained schools still actively implementing the program also have significant longer-term NAPLAN improvement in relation to similar schools and all schools. The example on right shows gains of 24.78% and 30.86% for Years 5 to 7 from 2011–13 to 2012–14 respectively.



See document: *NAPLAN results for YDM schools 2011–2015* <http://ydc.qut.edu.au/about/evidence-of-effectiveness.jsp>

2. FOR INDIGENOUS STUDENTS

Analysis of data 2010–2014 concerning performance of Indigenous students undertaken by the Indigenous Education section of the Queensland Department of Education indicated that Indigenous students taught by YuMi Deadly Mathematics trained teachers performed better in mathematics than Indigenous students taught by teachers not trained in YuMi Deadly Mathematics. See video: *Assistant Director-General, Indigenous Education, Qld Department of Education (2014)* <http://ydc.qut.edu.au/about/evidence-of-effectiveness.jsp>

3. FOR REMEDIAL STUDENTS

The YuMi Deadly Centre adapted YuMi Deadly Mathematics for remedial situations (students four years behind their age-level performance at entrance to secondary) and developed and trialled a program called Accelerated Indigenous/Inclusive Mathematics. The final evaluation report to the Federal Department of Education, Employment and Workplace Relations on the trials of this program indicated that the program improved student outcomes in schools and closed the gap on differences between Indigenous and non-Indigenous students. See <http://www.scootle.edu.au/ec/viewing/S7089/index.html>

4. SUPPORTED BY A FOCUS ON TEACHER QUALITY

YuMi Deadly Mathematics focuses on training teachers to be better teachers of mathematics, that is, on teacher quality. The 2016 Productivity Commission Report to the Federal Government on Primary Indigenous Education argued that quality teaching has been the only effective method for closing the education performance gap between Indigenous and other students. See <http://www.pc.gov.au/research/completed/indigenous-primary-school-achievement>. The Queensland Auditor General's report on out-of-field mathematics teaching used YuMi Deadly Mathematics as an example of effective professional learning for these teachers. See *Supply of specialist subject teachers in secondary schools, Report to Parliament 2: 2013–14* (Queensland Audit Office, 2013), 'A model of professional learning' (page 22):

<https://www.qao.qld.gov.au/sites/all/libraries/pdf.js/web/viewer.html?file=https%3A%2F%2Fwww.qao.qld.gov.au%2Fsites%2Fqao%2Ffiles%2Freports%2Frtp_supply_of_specialist_subject_teachers_in_secondary_schools.pdf>

5. SUPPORTED BY PROVIDING A PEDAGOGY BASED ON EVIDENCE

YuMi Deadly Mathematics reflects pedagogies that are strongly supported in the academic literature as effective in teaching mathematics. In particular the focus on big ideas and the components of the Reality–Abstraction–Mathematics–Reflection model are highly supported. See conference paper: *Large-scale professional development towards emancipatory mathematics: The genesis of YuMi Deadly Maths* (Cooper & Carter, 2016) <https://eprints.qut.edu.au/view/person/Cooper,_Thomas.html>

6. SUPPORTED BY FEEDBACK FROM CLASSROOMS AND SCHOOLS

YuMi Deadly Mathematics staff work with clusters of schools for two years renewing mathematics teaching. Data is gathered through observations, feedback sheets and reflection portfolios. At the end of projects, staff write reports using this data. Analysis of 12 reports from 2012 to 2015 representing feedback from 14 clusters involving the training of 78 schools indicates that across the two years there is improvement in:

(a) student attendance, engagement, behaviour, motivation, confidence and performance;

(b) teacher confidence, motivation, enjoyment, knowledge and capacity to effectively teach; and

(c) student and teacher beliefs/expectations that the students can learn mathematics at a high level.

7. SUPPORTED BY TESTIMONIALS, VIGNETTES AND CASE STUDIES

There are many examples of YuMi Deadly Mathematics training resulting in excellent school progress with respect to mathematics. Some examples are:

(a) Non-state boarding schools adopting Accelerated Indigenous/Inclusive Mathematics for special classes (students four years behind age level) and having all these students successful in Year 10 mathematics options including university entrance level subjects.

(b) A state secondary and state primary school, both with Indigenous/low SES populations, adopted YuMi Deadly Mathematics and now have no students below NAPLAN minimum standard in Years 5–9.

(c) A Head of Department of a middle-class secondary school, after trialling the extension version of YuMi Deadly Mathematics, stated: *It has provided us with resources to use for extending the thinking of our top students. It has also provided stimulation to modify what we already do.*

(d) A teacher in a regional primary school (low SES and Indigenous) trialled YuMi Deadly Mathematics ideas after one 3-day training workshop with such success that she now runs mathematics in the last class of each day *as it's the class they like and stay for.*

8. SUPPORTED BY SCHOOLS AND INDUSTRY

YuMi Deadly Mathematics is supported by schools and industry as the following two examples show.

(a) Schools have self-funded YuMi Deadly Mathematics training programs because of the reputation of these programs in schools. From 2012 to 2015, 75 schools in Queensland and Victoria spent over $2.8 million on YuMi Deadly Mathematics based training programs.

(b) In 2015, the YuMi Deadly Centre won the $3.399 million tender to deliver the mathematics element of an Indigenous STEM Education project managed by CSIRO in partnership with the BHP Billiton Foundation. This element, PRIME Futures, will train teachers in over 60 schools in Queensland, South Australia and Western Australia with higher than average Indigenous populations. See <http://www.csiro.au/en/Education/Programs/Indigenous-STEM/About-Mathematics>