



Application of Get set for success at UNE

Janelle Wilkes^a and Lorelle Burton^b

^aUniversity of New England ^bUniversity of Southern Queensland

Part of - Get set for success: using online self-assessments to motivate first year engineering students to engage in and manage their learning

Funded by Australian Government Office for Learning and Teaching

Outline

- The overall project – Get set for success
- Get set for success questionnaire
- Why and how UNE became involved
- Outcomes
- Hurdles with implementation
- Future

Get set for success project

- 2011-2013 Funded by Australian Government Office for Learning and Teaching (OLT)
- **Get set for success:** using online self-assessments to motivate first year engineering students to engage in and manage their learning
 - University of Southern Queensland - Professor Lorelle Burton (Project Leader); Professor David Dowling, Dr Majella Albion
 - The University of Queensland - Associate Professor Lydia Kavanagh, Dr Liza O'Moore
 - University of Technology, Sydney - Dr Tim Aubrey, Professor David Lowe now at The University of Sydney
 - The University of Newcastle - Associate Professor Bill McBride
 - University of New England - Dr Janelle Wilkes, Mr Rex Glencross-Grant



Get set for success project

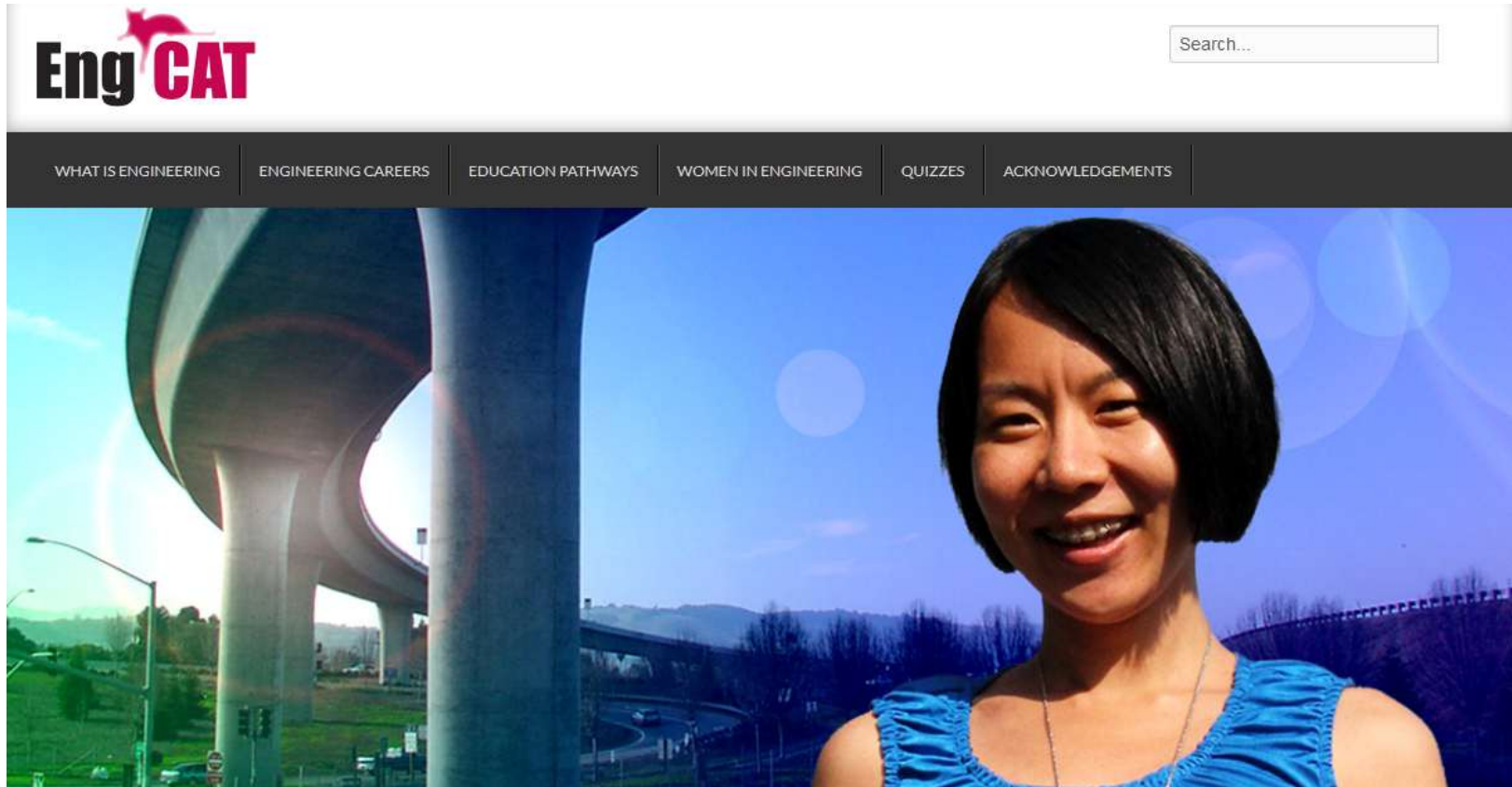
- **Aimed to**
 - improve the retention and progression of engineering students by identifying key factors that impact on successful transition past the first year hurdle
 - outline strategies for motivating first year students to engage in their studies

Get set for success project

- **Outcomes**

- Created an online tool (Get set) that enabled individuals to self-assess their cognitive and non-cognitive abilities
- Get set provides automatic individual feedback to help students
 - access support and develop an individual plan to address any gaps in their knowledge and skills
 - use their self-assessment results to enhance and manage their learning
 - review and refine their career plan to become an engineer
- Engineering Career Appraisal Tool (EngCAT) will become a source of information for prospective students, enabling them to self-assess their readiness to study engineering and make an informed career choice

Get set for success project



<http://engcat.usq.edu.au/>

Get set for success project



Quizzes

Do you like solving puzzles? Do you enjoy solving problems? Do you enjoy building new things? Engineering is the career choice for you!



Take the following three quizzes to self-test your interest and motivation in engineering:



[Interest and Motivation for Studying Engineering](#)



[Five Factors Influencing Who You Are](#)



[Approaches and Study Skills Inventory for Students](#)

Use your individual feedback to review and build your knowledge and skills to experience success in engineering studies. Learn more about how to interpret your learning profile by watching this video.



▪ The video may take some time to download using Microsoft Internet Explorer, another browser such as Google Chrome will download the video in a shorter time. A [transcription of the video](#) is available (pdf 168kB).

<http://engcat.usq.edu.au/>

Get set questionnaire

- **Non-cognitive**

- Learning styles - deep, strategic and surface
- Interest and Motivation for Studying Engineering (IMSE) scale
 - developed by the project team to assess attitudes to engineering
 - 31 item measure
- Built on research by Professors Lorelle Burton, David Dowling and David Lowe

Get set questionnaire

- **Cognitive**

- Mathematics
- Chemistry
- Physics

- Kavanagh, L., O'Moore, L., & Samuelowicz, K. (2009). *Characterising the first year cohort knowledge*. Proceedings of the Australasian Association of Engineering Education Conference, Adelaide.
- Jennings, M. (2011). *The transition from high school to university: The University of Queensland perspective*. Eighth Southern Hemisphere Conference on Teaching and Learning Undergraduate Mathematics and Statistics, Rotorua, New Zealand

UNE context

- **Armidale**
 - ~ 25 000 people
- **UNE - regional university**
 - ~18 000 students
- **Diverse cohorts**
 - Distance education (>80%)
 - Mature age (>25 years old)
 - Low socioeconomic status
 - Special entry pathways
- **Schools of**
 - Environmental and Rural Science
 - Science and Technology



Why and how UNE became involved

- **Wanted better understanding of cohort**
 - Students seemed to be becoming more underprepared for university study in the sciences
 - Admission pathways
 - Decreasing level of maths taken for HSC
 - Removal prerequisites
 - Lower GPA and progression than expected
 - Correlations of motivations for studying engineering and learning styles with GPA and retention at USQ
 - Diagnostics testing improving progression
- **Involved via networking with USQ and UQ at AAEE conference 2010**

Get set questionnaire

- **Getset for success**

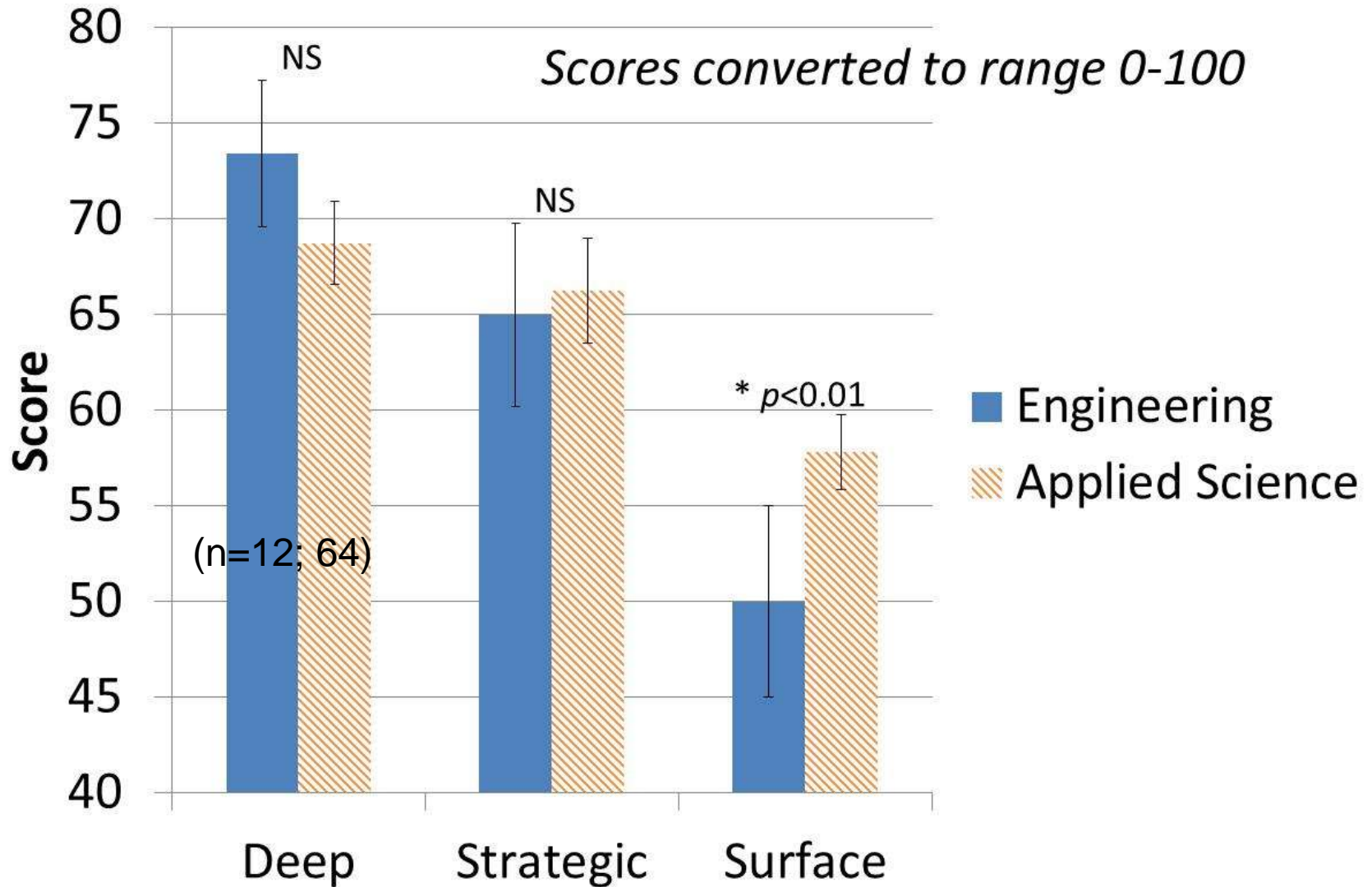
- UNE Sample

- Engineering – Bachelor of Engineering Technology
 - Applied Science – Bachelors of Agriculture, Agribusiness, Environmental Science, Ecology, Zoology, Science, Rural Science, Animal Science and Agriculture/Business

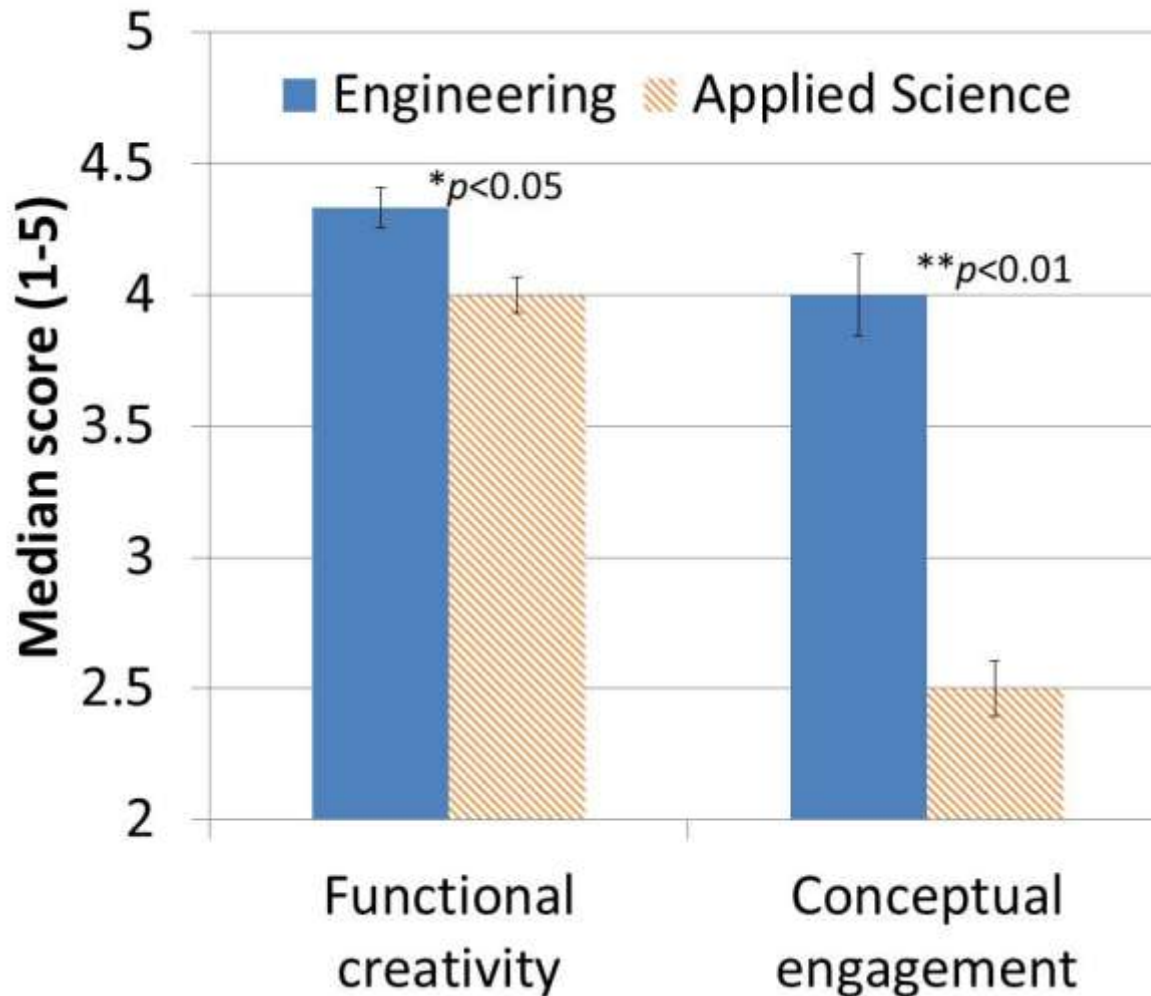
- n=76 (40% of cohort)



Learning strategies



Interest and Motivation for Studying Engineering (IMSE) Scale



Functional creativity

- measure of how much the students want to know how things work
- interest in designing and building things

What should we do with the results?

- **Preliminary results showing**
 - Significant correlations between maths score and GPA
- **How can we better support our students using this data?**
 - Small sample size, so in 2014 expanding to all students enrolled in science and engineering related undergraduate courses
 - Not a controlled “test” so can’t use to stream students; but they can reflect on their gaps in knowledge and revise
 - Supported via foundation units (MATH123, CHEM123, PHYS123)
 - Many mature age
 - Summary of which questions students struggled with sent to unit coordinators

Way forward

- **UAC**

- Prerequisites – can we bring them back?
 - “Assumed knowledge”
 - “Recommended studies”
- } Make clearer to HSC students and teachers what this means?
- Those with lower ATAR need clearer guidance that they require a minimum of Intermediate (2 unit Mathematics (not General))
 - Could NSW HSC Mathematics (2 unit) be relabelled to ensure it is clearer?
 - Universities write HSC Mathematics (not General Mathematics) in UAC – has a negative connotation

Way forward

- **First Year Teaching and Learning Network Coordinators**
 - Each of 9 schools has one
 - Much stronger links between Science and Technology and Environmental and Rural Science
 - Enabling Get set to be administered across both

Hurdles with implementation

- **Implementation of Get set**
 - Took time to customise to UNE
 - Drupal (open source content management) difficult to get used to
 - Need IT department's support
 - We used off site website to simplify
 - Short time lines for ethics and delivery

Conclusion

- Questionnaire
 - More surface learning in Applied Science students
 - Negative correlation with GPA and progression
 - Maths quiz and GPA correlated
 - Applied Science don't love maths so much...
- More communication between UNE Schools

Acknowledgements

- Chemistry Inventory I (Jim Birk, Foundation Coalition)
- CHEM II Chemistry Inventory II (Jim Birk, Foundation Coalition)
- Thornton, R.K. & Sokoloff, D.R. (1998), Assessing student learning of Newton's laws: The force and motion conceptual evaluation and evaluation of active learning laboratory and lecture curricula. American Association of Physics Teachers, pp. 338-352
- Thermodynamics Concept Inventory (Clark Midkiff, Foundation Coalition)
- Adams, P. (The University of Queensland), MATH1050 Entry Skills Survey/Quiz, Semester 1, 2007
- Shallcross, D. (The University of Melbourne) Material & Energy Balance Concept (Version3 2/2007)
- Mulford, D.F. & Robinson, W.R. (Purdue University) An Inventory for Alternative Conceptions among First-Semester General Chemistry Students (From Mulford, D.R. & Robinson, W.R. (2002) An Inventory of Alternate Conceptions among First Semester General Chemistry Students. J. Chemical Education, 79 (6))
- Lawrie, G. (The University of Queensland) Diagnostic Survey: Your Prior chemistry experience before beginning this course (CHEM1030) [2008]
- Shallcross, D. (The University of Melbourne) ESD2 CONCEPT Inventory [2009]
- Halloun, I., Hake, R. & Masca, E. (1955) Force Concept Inventory (Mechanics Survey) revised version, (From Hestenes, D., Wells, M.M. & Swackhamer, G., 1992, The Physics Teacher, March)
- Gurgenci, H. (The University of Queensland) Engineering 1010 Module 1 Introduction
- Smail, Rowe G. and Godfrey, E. (2008) What do they know? An entry-level test for electricity, Proceedings of the 2008 AaeE Conference, Yeppoon