



TENZ/ICTE CONFERENCE PROGRAMME

TECHNOLOGY: AN HOLISTIC APPROACH TO EDUCATION

**St Margaret's College
Christchurch, New Zealand
9-11 October 2017**



International Conference on
Technology Education (ICTE)
Asia-Pacific Region



TENZ TECHNOLOGY
EDUCATION
NEW ZEALAND

Welcome to TENZ/ICTE 2017

Welcome to another successful TENZ/ICTE Conference. I would like to welcome all delegates, especially those who have travelled considerable distances. For those of you from abroad a special welcome to New Zealand and for those of you new to Christchurch welcome to our recovering city.

In 1997 Christchurch hosted the first TENZ conference. This conference signalled the beginning of TENZ and technology education in New Zealand. In 2005 the conference returned to Christchurch, however the city that hosted those two conferences is very different from the Christchurch you see today. In September 2010 and February 2011 Christchurch suffered a series of devastating earthquakes. The image used on the front of this programme and in conference advertising material is the city's iconic broken Christ Church Cathedral. Although it remains broken, many in the city are determined it will be rebuilt to its former glory. Its tenacity and the people's determination to keep the cathedral is symbolic of our journey in technology education. Many people have doubted and questioned technology's continued existence in The New Zealand Curriculum (NZC), but those of us who 'are in the know' realise its full worth and the potential it holds for our young people.

This year the Ministry of Education announced the inclusion of digital technologies into the technology curriculum. This is a very clear signal that technology is now deeply embedded into the NZC and on the international arena. It plays a huge role in preparing learners for life in the mid to late 21 Century and beyond.

I would like to thank those organisations, listed on the previous page, who have assisted us in the running of the conference. Our thanks too, goes to all presenters of papers and workshops. We appreciate everyone's assistance and input as would have had difficulty putting together such a comprehensive programme without you all.

Thank you very much for attending the conference. We hope you enjoy the wide range of papers, workshops and field trips we have on offer. Finally my special thanks goes to the organising committee to have devoted many volunteer hours to the organisation of the conference, on top of their already very busy teaching / working lives.

Wendy Fox-Turnbull

On behalf of the conference organising committee.

Organising Committee

Ann Patterson

Ceri de Boo

Daniel Gorman

John Williams - ICTE liaison and Research Paper Coordinator

Paul Snape

Trudy Keys

Wendy Fox-Turnbull - Convenor

General Information

Conference website

For detailed information about the conference in general, keynote speakers research and practice papers and workshops, please visit our website <https://tenzcon.org/>

Other Information

Buses

Generally delegates will be responsible for their own transport. Exceptions to this are

1. Bus to the Conference Dinner. This will leave from St Margaret's College Papanui Road entrance at 6.00 pm. It will return to the same place at 11.00 pm
2. Mini buses and buses for all field trips. Details will be advised on Monday and Tuesday morning at morning housekeeping. These will leave from the Winchester Street entrance

Committee Members

The committee members will be identified by their red lanyards. They will be happy to answer any queries that you may have.

Name Tags

Please wear nametags at all times at the conference activities, including social gatherings.

Food

Lunch and morning tea will be served in the SMCOGA atrium beside the auditorium. Please note that lunch will not be served on Wednesday. NB: Some field trips will require a packed lunch which will be provided. More details about this at morning housekeeping.

Happy Hour

The Happy Hour will occur at the Pavilions Hotel, 42 Papanui Road (03 355 5633) starting at 7.00 pm. Everyone is welcome. This will be an opportunity to register for the conference also.

Photocopying Facilities

Please make inquiries at the conference desk located inside the main door of the SMCOGA Atrium

Baggage

Baggage may be left at the reception area for storage on Wednesday

Medical Services

If you require medical help please contact the one of the following:

Pegasus Health 24 Hour Surgery, Urgent Care Centre, 401 Madras St, Phone +64 (0)3-365 7900 Open 24 hours

The Urgent Pharmacy, 931 Colombo Street, phone +64 (0) 3 365 777

For Emergencies dial 111

Taxis

First Direct Taxis 03-377 5555

Gold Band Taxis 03-3795795

Local Facilities

A short walk north up Papanui Road you will find Merivale Village Shopping Centre which hosts a range of retail outlets including shops and restaurants and a supermarket. Walk 5-10 minutes south down Papanui Road and you will find a range of restaurants at the Carlton Corner on the intersection of Papanui Road, Bealey Avenue and Victoria Street. From turn right (South-West) at Carlton Corner onto Bealey Av, walk for 100-200m and you will find Christchurch's famous Hagley Park. The Botanical Gardens and Museum are a 10-15 walk from the corner of Bealey Av and Park Terrace, along the beautiful Avon River.

Programme Overview

	Monday 9 October 2017				Tuesday 10 October 2017				Wednesday 11 October 2017	
7.45 -	Registration 7.45-8.45 am				Trade Displays Open 8.00am				Trade Displays Open 8.00am	
8.45	Welcome Conference Opening				TENZ /ICTE Celebration				Notices	
9.00	Keynote:				Keynote:				Keynote:	
9.30										
10.00	Research Papers x2	Practice Papers			Research Papers x2	Practice Papers			Research Papers x2	Practice Papers
10.40	Morning Tea									
11.00	Research Papers x 3	Workshops			Research Papers x3	Workshops			Research Pa-pers x3	Workshops
12.00	Innovative Practice Presentations				Innovative Practice Presentations				Innovative Practice Presentations	
12.30	Lunch								Conference Closure and Prize draws	
1.00-5.30	Visit 1 Airways	Visit 2 Fonterra	Visit 3 Orana Park	Visit 4 Rebuild-ing a City	Visit 1 repeated	Visit 4 Repeated	Visit 5 Martin jet Pack	Visit 6 Chef Mas-ter Class	1.00-1.30 pm TENZ AGM	
6.00	Drinks and casual meal for those who wish (pay as you go) Possible City walk, Gap Filler Tour.				6.00 for 6.30 pm TENZ Conference Awards Dinner The Tannery Addington					

	General,
	Keynotes
	Research Papers
	Practice Papers
	Workshops
	Innovative Practice Presentations

	Monday 9 October 2017					
7.45 - 8.45 am	Registration 7.45-8.45 am Trade Displays Open 8.00am					
8.45	Auditorium Welcome Conference Opening: <i>Hon. Lianne Dalziel Mayor of Christchurch</i>					
	Auditorium Keynote: Professor Kay Stables , Goldsmiths, University of London Holistic Approaches to Learning, Teaching and Assessment in Technology Education: Authenticity, Challenges, Supportive Approaches and Tool					
10.00 10.20	WS 105 Teachers' Perceptions Of The Technology Curriculum: The Influence Of The School Context For Meaning-Making And Knowledge For Practice <i>Elizabeth Reinsfield</i> Teachers' perceptions of assessment in Design and Technology <i>Chandan Boodhoo</i> <i>Claire J. McLachlan</i> <i>P. John Williams</i>	WS 107 The Design and Drafting Education for the Next Society in Junior High School <i>Shinichi, Fujita</i> Development of Teaching Process for the Measurement and Control System Learning <i>Toshikazu Yamamoto</i> <i>Kimihito Takeno</i> <i>Kazutoshi Nagatani</i>	WS 109 Matamata Intermediates' Journey to Review Technology <i>Lorraine Stiles</i> <i>Deputy Principal Matamata Intermediate</i>	WS 111 Creating Innovative ways to Collate Student Evidence for Assessment in Technology using an Online Platform. <i>Sara Allpress</i> <i>Waiopehu College</i>	WS 113 Te Ao Tūroa Supporting Intergenerational Sustainability in the Primary Industries for Primary and Intermediate Teachers <i>Dr Vicki Compton & Dr Jaimie-Leigh Jonker</i> <i>MPI</i> <i>Wellington</i>	WS 103 "Physical Visualisations" and Physical Direct Manipulations" Concepts for Networking Study <i>Kazuaki Yoshihara, Graduate School of Education</i> <i>Hiroshima University, Japan</i>
10.40	Morning Tea					

Monday 9 October

11.00	WS 105	WS 107	WS 109	WS 101	WS 113	WS 104	WS 103
	Pre-service Teachers' Preparedness to use ICT: A Western Australian perspective	Study of Systematization for the Methods and Contents of Technology Education	Enhancing Formative Assessment of Learning in Technology	Exponential Technologies and how they Might Influence the Future of Education	National Engineering Education Plan (NEEP) Project	Biotechnology: What's it all Really About?	Introducing Computational Thinking to the NZC: What's the big idea?
11.20	Huifen Jin	Kazuhiro Sumi	Wendy Fox-Turnbull				
	Jeremy Pagram	Akira Kikuchi		Intro and the nature of disruption, and brief oversight of the 6 technologies.			
	Martin Cooper						
11.40	Students' Perceptions Towards Technology in Korean High School	Advancing the Iteration Deficit Reduction Model	Design to Understand: Promoting Higher Order Thinking Through T/E Design Based Learning				
	Choon-Sig Lee	Roderick Walden	John G. Wells	Michael Campbell	John Findlay		
				Mind Lab by Unitec	Otago Polytechnic		
				Christchurch	Dunedin & Michael Edmonds	Hayley Barrowcliffe	Professor Tim Bell
					Ara Institute of Canterbury	Northcross School	University of Canterbury
					Christchurch	Auckland	Christchurch
	Cultural Movement toward Technology Education in South Korea:	The Girl on the Bus or the Spider in the Bathroom? Students' Enduring Memories of Learning Experiences Outside the Classroom in Technology Education	A Framework for Assessment of the Features of Technological Learning Activities in Elementary School Handicraft Education				
	In-service Technology Teachers' Movement						
	Hyuksoo Kwon	Louise Milne	Atsuhiro Katsumoto				
	Kwang Jae Lee		Keita Sera				
			Jun Moriyama				
12.00	Auditorium : Innovative Practice Presentations: Mark Prujean - Go Baby Go						
12.30	Lunch						
1.15-5.30	Visit 1	Visit 2	Visit 3 Orana Park / Concision (24)	Visit 4 Construction BECA/ Tait Electronics (20)	Visit 5 Gapfiller		
	Airways/Trimble (Limit 12)/ Orion Health	Fonterra Darfield (25)			Snowy Peak(20)		
6.00	Drinks and casual meal for those who wish (pay as you go)						
	Possible City walk, Gap Filler Tour.						

Tuesday 10 October

	Tuesday 10 October 2017					
7.45 - 8.45 am	SMGOG Atrium Trade Displays Open 8.00am					
8.45	Auditorium TENZ /ICTE Celebration Celebrating 20 Years					
9.00	Auditorium Keynote: Mark (Kuen-Yi) Lin , National Taiwan Normal University New Paradigm or Old Wine? The Development of STEM Education and Maker Movement in Technology Education in Taiwan					
10.00	WS 105 A Distance Educational Support Method for Class with Practical Training Using IoT <i>Atsushi Iwayama</i>	WS 107 Proposal of Digital Craft Introduction Model at Faculty of Teacher Training <i>Hiroyuki Muramatsu</i> <i>Kazuo Kadota</i> <i>Unkai Sato</i> <i>Hideki Kawakubo</i>	WS 109 Cross Context Teaching, the Evolutionary Nature of a Technology Teacher <i>Ceri de Boo</i> <i>Cashmere HS</i> <i>Christchurch</i>	WS 111 “How We Have Progressed and Where to From Here”. <i>Gary Brinsden Innovative 3D Technologies and a teacher of Technology at Pakuranga College.</i>	WS 113 Soft Skills in Technology Education <i>Paul Snape</i> <i>University of Canterbury</i> <i>Christchurch</i>	WS 103 Rethinking Tivaevae as the Model for Community Sustainability, Textiles Technology Collaboration and Wellbeing of Students <i>Sarah Wirth</i> <i>Samuel Marsden Collegiate School</i> <i>Wellington</i>
10.20	Research in the Informal Technology and Engineering Education through the Participant Awareness and the Programme Satisfaction <i>Nhayoung Lim</i> <i>Changhoon Lee</i> <i>Kisoo Kim</i>	New Technology Education Curriculum in National Curriculum in Korea and its Implications to Global Technology Educational Circles. <i>Sangbong Yi</i>				
10.40	Morning Tea					

Wednesday 11 October

	Wednesday 11 October 2017					
7.45 - 8.45 am	SMGOG Atrium Trade Displays Open 8.00am					
8.45	Auditorium Conference Convenors John Williams and Wendy Fox-Turnbull					
9.00	Auditorium Keynote: <i>Cather Simpson</i> University of Auckland Universities as Drivers of Innovation, Economic Transformation					
10.00	WS 105 Effects of Applying an Engineering Design Process in a STEM-based Learning Activity to Help Develop Engineering Design Thinking among Pre-service Technology Teachers <i>Kuen-Yi Lin</i> <i>Ying-Tien Wu</i> <i>Yi-Ting Hsu</i>	WS 103 Digital as a Generic a course <i>Trudy Keys</i> <i>St Margaret's College</i> <i>Christchurch</i>	WS 107 Innovative Ideas for Teaching Foods at Year 7 & 8 <i>Ann Paterson</i> <i>Breen's Intermediate</i> <i>Christchurch</i>	WS 109 General Technology (GT) Curricula in Senior High Schools in China <i>Jianjun Gu, Jie Wang</i> <i>China</i>	WS 111 Teaching with Simple and Effective Analytics <i>Mazharuddin Syed Ahmed</i> <i>Ara Institute of Canterbury Christchurch</i>	WS 113 Accelerating and Adding Value to Students' Learning and Understanding Who Start Year 7 with No or Very Little Technology <i>Katy Smele</i> <i>Heaton Intermediate</i> <i>Christchurch</i>
10.20	Development and Implementation of Teaching Material Based on STEM Education for Japanese High School Students to Create a "Magnetic Top": Discussions for Enhanced Understanding <i>Takekuni Yamaoka,</i> <i>Shinichi Okino,</i> <i>Kimihito Takeno</i> <i>Shinji Matsumoto</i>					
10.40	Morning Tea					

Wednesday 11 October

11.00	<p>WS 105</p> <p>Meta-analysis on the effect of convergence education(STEAM) based on technology</p> <p><i>Minwoong Kim</i> <i>Taehoon Kim</i></p>	<p>WS 107</p> <p>An Analysis of Students' Point of View and Criteria for Evaluation of Social Impact of Technology</p> <p><i>Keita Sera</i> <i>Atsuhiko Katsumoto</i> <i>Jun Moriyama</i></p>	<p>WS 213</p> <p>STEMaker: From Maker to Innovative and Entrepreneurial Talent, anthropocentric vision and beyond</p> <p><i>Antony Wai Yip Leung,</i> <i>Kin Kwok Wan, Alan Ka Lun Wong,</i></p>	<p>WS 111</p> <p>Exponential Technologies and how they might influence the Future of Education</p> <p>Session 3, Human Interface, Future of Employment, Bioengineering, Energy/Space Exploration & Transport.</p> <p><i>Michael Campbell</i> <i>Mind Lab</i> <i>Christchurch</i></p>	<p>WS 109</p> <p>Going Beyond Kahoot - Exploring Digital Tools to Promote Learning</p> <p><i>Danny Gorman</i> <i>Te Waka Technology Centre</i> <i>Christchurch</i></p>	<p>WS 113</p> <p>Virtual and Augmented Reality</p> <p><i>Brendan Davidson</i> <i>St Mary's Cathedral College</i> <i>Sydney</i></p>	<p>WS 103</p> <p>Using Resources Available Online</p> <p><i>Wendy Webb</i> <i>Core Education</i> <i>Wellington</i></p>
11.20	<p>Manufacturing Wooden Toys as STEAM Teaching Practice Framed by Waves/Showers-of-Emotion Theory</p> <p><i>Yasuhiro Matsunaga</i></p>	<p>A critical Review of the Functioning of Design Teams from a Macrocognitive Perspective.</p> <p><i>Nigel B Goodwin</i></p>	<p>What's in the soup? Fusion within different STEM programmes</p> <p><i>David Ellis</i></p>				
11.40	<p>The Localisation of Technology Education Curriculum in Botswana: Benefits, Challenges and Implications for Future Planning,</p> <p><i>Victor Ruele & Olefile Molwane</i></p>	<p>A Study on the Relationship between the Local High School Student's Information Utilization and the Learning Behaviour about Manufacturing</p> <p><i>Tetsuya Yamada</i> <i>Takekuni Yamaoka</i> <i>Kimihito Takeno</i></p>	<p>To flip or not to flip, that's the question" – Findings from an exploratory study into factors that may influence tertiary teacher to consider a flipped classroom model</p> <p><i>Lakshmi Chellapan</i></p>				
12.00	<p>Auditorium: Innovative Practice Presentations</p> <p>Neville Myers: What Can We Expect?</p>						
12.30	<p>Auditorium: Conference Closure and Prize draws</p> <p>Professor Alister Jones, University of Waikato</p>						
1.15-3.00	<p>CG 202:1.00-1.30 pm & 1.30-3.00 pm</p> <p>TENZ AGM & TENZ Council Meeting</p>				<p>CG 201: 1.00 – 2.30 pm</p> <p>ICTE Board meeting</p>		

Trade Display Information



Innovative 3D Technologies

Gary Brinsden gary@innovate3d.co.nz

Gary has been a teacher of Technology and Graphic Design for more than 35 years and is now a DVC teacher at Pakuranga College and uses 3D printers every day in his teaching practice. 3D printing or more correctly “rapid prototyping” has become much more user-friendly, much more affordable. Now with a much lower capital outlay and cheaper running costs it is possible to expose students to industrial practices that have been used in industry for over 20 years. This will help develop student confidence in the advancement of design development and testing, design realisation and short run manufacturing. All tools for a 21st century Technologist.

3D printers at Pakuranga College have become an integral part of the students learning to inspire innovative design. Students from Y10 through to Y13 have some exposure to this technology from early introduction in Y10 to full student lead use in Y13 and are available to all students any time of the school day.



3D Printing Systems

Bruce Jackson bruce@3dprintingsystems.com

Kiwi-owned and operated, with a strong presence in Australia, 3D Printing Systems is the exclusive distributor of the UP 3D printers from TierTime. We pride ourselves in providing the best desktop 3D printers and scanners to schools across New Zealand at an affordable cost, as well as maintaining outstanding levels of service & local support for our teachers and students.



Vegetables.co.nz

Pip Duncan
Education and Marketing Manager

pip@foodadvisory.co.nz

Vegetables.co.nz is a not-for-profit levy funded organisation representing a collaboration of national vegetable industry groups. Through their limited funds these groups aim to increase the knowledge of and consumption of NZ fresh grown vegetables.



SIGNAL ICT Graduate School

a collaboration of University of Canterbury, University of Otago, Lincoln University, Ara Institute of Canterbury and Otago Polytechnic, is committed to growing and developing tech professionals for New Zealand. For educators SIGNAL offers **Educate** a Postgraduate Certificate qualification focused on the NZ Digital Technologies curriculum. The two courses focus on the Computer Science and Computer Programming aspects of the curriculum. Delivered through an intensive workshop during school holidays and an online community over the remainder of the school year Educate fits around your workload.

Trade Display Information



University of Canterbury School of Product Design

Conan Fee & Grahame Burgess

conan.fee@canterbury.ac.nz

grahame.burgess@canterbury.ac.nz

Bachelor of Product Design, new for 2018

Combine engineering and science with creative arts and business to shape a future with limitless possibilities

There is growing demand from Industry for students who are both creative and technically literate. A Bachelor of Product Design at UC brings together both design and engineering to produce skilled and creative graduates who understand aesthetics and technology.

Bachelor of Product Design is a three-year degree combining creative design, science, engineering and business with majors in:

- Industrial Product Design,
- Applied Immersive Game Design, or
- Chemical, Natural and Healthcare Product Formulation.

For more information contact:

Student Advisor

Phone: +64-3-3642 987 Ext: 94271 or 94272

Email: engdegreeadvice@canterbury.ac.nz

www.canterbury.ac.nz/engineering/product-design

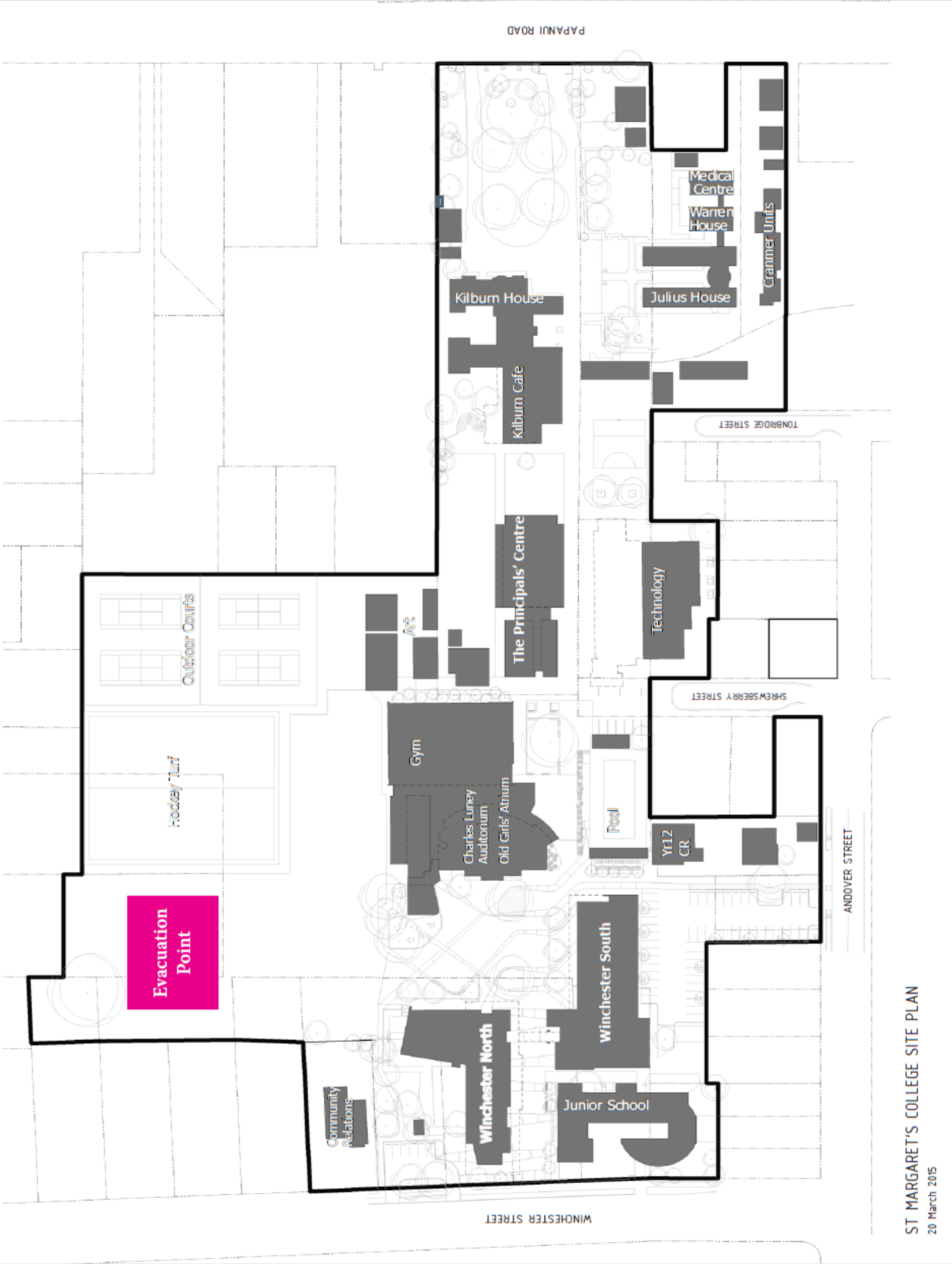
Designability

Merrick Russell

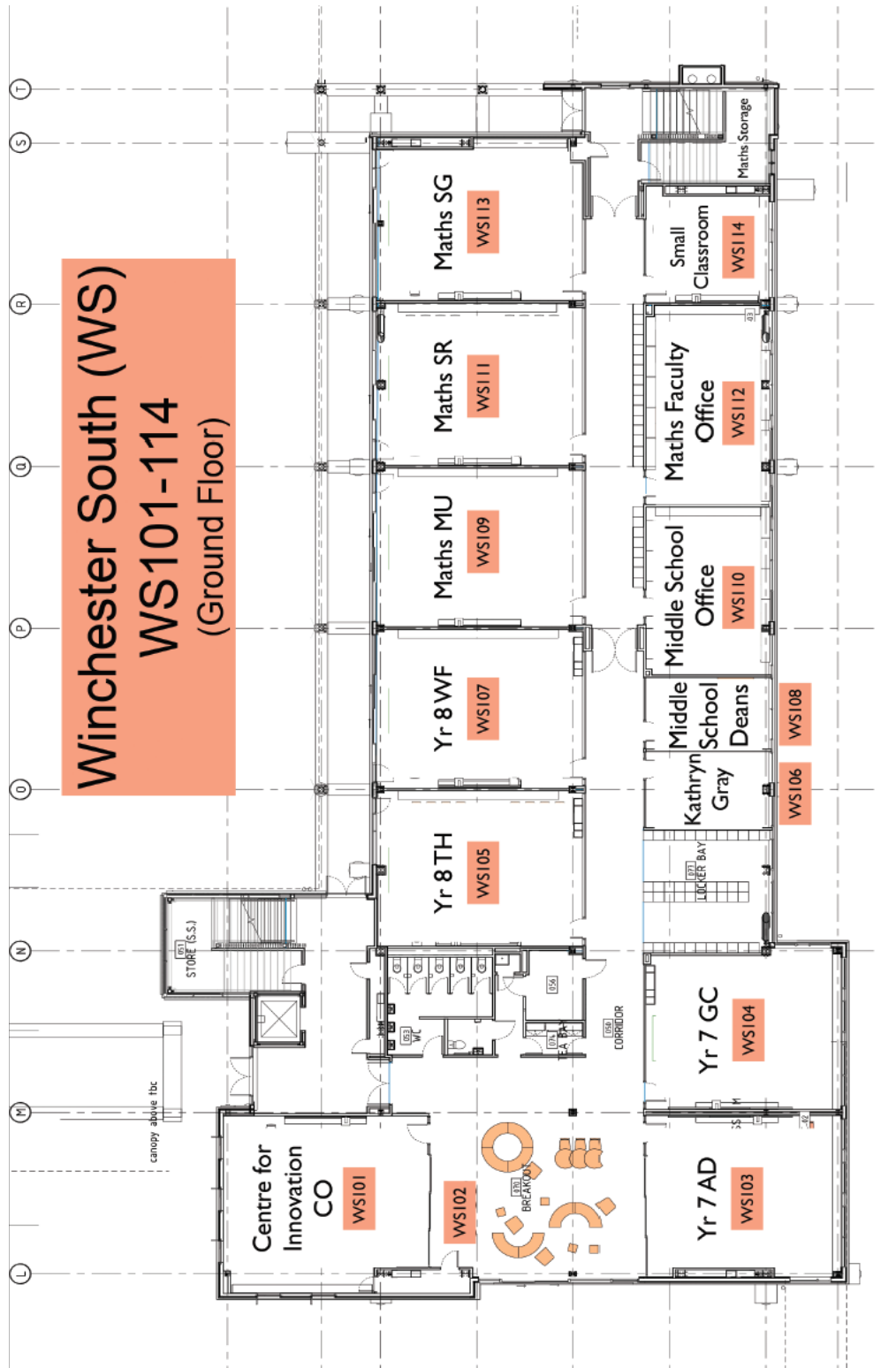
merrick@designability.com.au



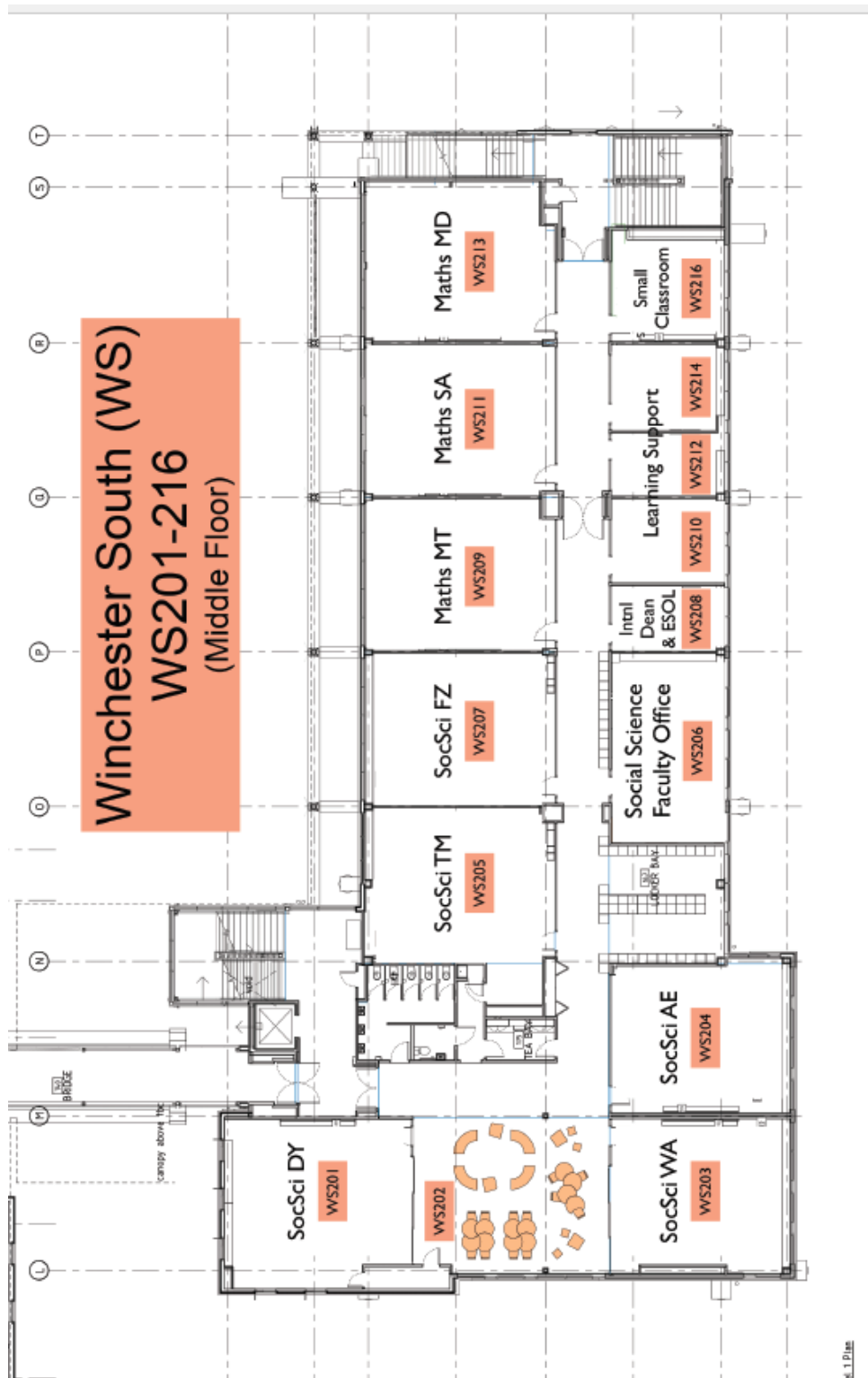
Maps: St Margaret's College Overview



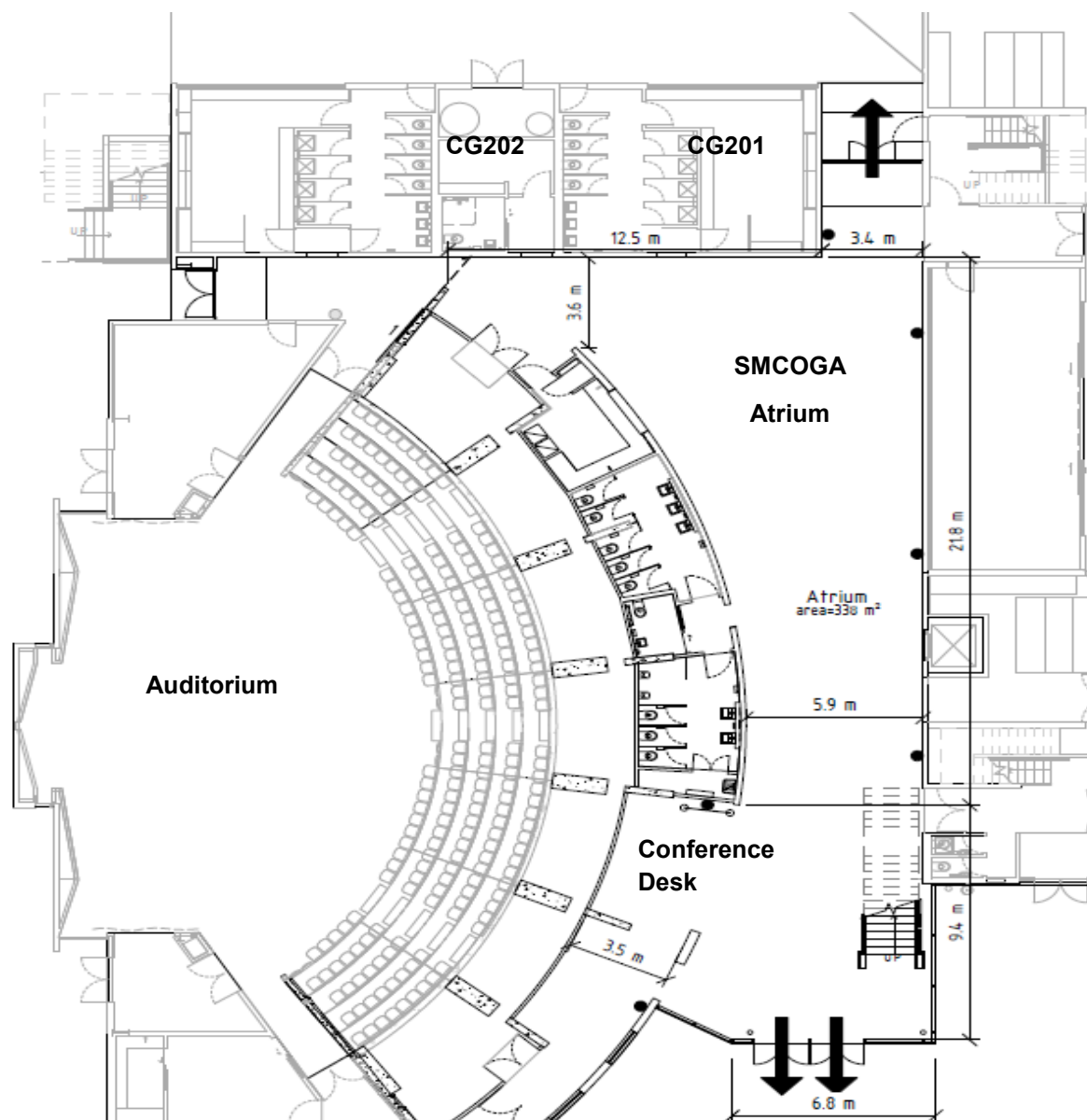
Winchester South (WS)
WS101-114
(Ground Floor)



Maps: St Margaret's College Conference Rooms



Maps: St Margaret's College Auditorium & Atrium



Thank you



The conference organisers are grateful to the following organisations for their assistance in the organisation of the conference.

TEMS centre University of Waikato

The Technology, Environmental, Mathematics and Science Education Research Centre (TEMS) is composed of academic staff and students who are interested in research in Technology, Environmental, Mathematics and Science Education, and ICT in these areas. The Centre provides a range of support for research students, and brings academics together to form a community of scholars.

Future in Tech

The Futureintech programme's main focus is on bringing people who already work in technology, engineering and science-related industries into schools. By sharing their experiences and pathways, we can inspire young New Zealanders to explore careers in areas where there is strong demand for people with the right skills.

Vegetables.co.nz is a not-for-profit levy funded organisation representing a collaboration of national vegetable industry groups. Through their limited funds these groups aim to increase the knowledge of and consumption of NZ fresh grown vegetables.

The University of Canterbury is world class learning environment, a vibrant campus and a great student lifestyle that's packed with opportunities. Its campus has modern teaching and research facilities and is set in the heart of a city that has become a magnet for growth and innovation. Further afield lies a region packed with outdoor adventure, from the mountains to the sea

ICTE (International Conference of Technology Education) Asia Pacific is a professional group that aims to promote communication and academic exchange in Technology Education. The first conference was held in Otsu, Japan in 1995. Since then they have been held throughout the Asia Pacific region on a biennial basis.

TENZ is a professional network set up to promote and support Technology Education in New Zealand. It is of interest to all those working in Technology Education, working in a technology-based enterprise with an interest in education, and those just plain interested!

