

The National Design & Technology Teacher
and International Research Conference

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Learn, Make and Invent



Design Led Innovation

6-8 December
Swinburne University of Technology &
Swinburne Senior Secondary College

DATTA
AUSTRALIA
Design And Technology
Teachers Association



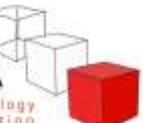
SWINBURNE
UNIVERSITY OF
TECHNOLOGY

**CENTRE FOR
DES/IGN
/INNOVATION**

DATTArc



DATTA
VICTORIA
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Teachers Association



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Carlin Grieve
Epping Secondary College

Purchasing from Pakronics is just the beginning of their association to help you learn Technology. They offer complete technical support, should you need it while working with the educational kits. It's sort of like having a personal STEM Concierge!

Pam Wright
Assistant Principal at Thornesbury West Primary



DATTA18

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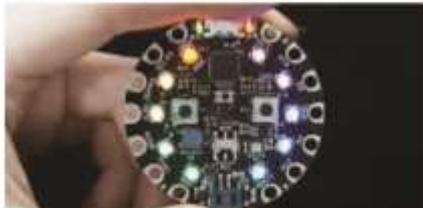
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WELCOME

Join DATTA Australia at our biennial **National Design and Technology Teacher and International Research Conference - DATTArc**, held in partnership with Swinburne University of Technology.

It is taking place from the 6-8 December 2018, with internationally renowned keynote presenters and a fantastic variety of seminars and hands-on workshops running at Swinburne's Advanced Manufacturing & Design Centre and Swinburne Senior Secondary College.

Our delegates - whether they teach primary or secondary, are from the tertiary sector or are community educators - will explore the future of Design & Technology, asking how we can assert its future as a vital field of learning and a major provider of applied STEM learning, creative problem solving skills and innovative capabilities.

This event is the 4th National DATTA Conference and the 10th biennial international conference on Technology Education Research (now entitled DATTArc). It's a unique opportunity for educators from all sectors to gather and delve into Design & Technology education together.

Special Events for Delegates



Conference Dinner, Thursday 6 December, Hawthorn Arts Centre

Join colleagues to network, share a meal and hear from our dinner speaker, Professor David Spendlove - Director of Teaching, Learning and Students at The University of Manchester.



Between Two Worlds | Escher X Nendo, Friday 7 December, NGV

Enjoy a drink at the bar, explore this summer blockbuster exhibition and participate in an exclusive presentation by Ewan McEoin, NGV's Senior Curator from the Department of Contemporary Design.

Our Conference Sponsors

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Our Dinner Sponsors

OUR KEYNOTE PRESENTERS AND SPEAKERS



Professor P John Williams
Chair of the DATTArc Review Board

Professor Williams is Professor of Education and the Director of Graduate Studies in the School of Education at Curtin University in Perth, Western Australia, where he teaches and supervises research students in STEM and technology education. He is on the editorial board of seven professional journals, and has authored or contributed to over 240 publications. He has chaired the paper review process for four prior conferences.



**Steve Keirl, Reader at Goldsmiths, University of London: our
Research Conference Provocateur**

Steve Keirl staunchly advocates *Design and Technology* as key to general education. He staunchly resists STEM. He collects washing-up brushes. Steve will float through the research conference presentations and provide critique to assure the big and key issues of the event have us all taking pause to place serious attention to what we are doing versus what we need to do, and what we ought avoid.



Professor Hung Nguyen
Welcome address, Thursday

We are very honoured to announce that the DATTArc will be opened by Professor Hung Nguyen, Pro Vice-Chancellor for the Faculty of Science, Engineering & Technology at Swinburne University of Technology. With strong research interests in the contribution of *design thinking*, and *design Innovation*, Professor Nguyen has an end to end expertise in biomedical engineering, artificial intelligence, and neuroscience. He has developed several medical devices for diabetes, disability, fatigue, and cardiovascular diseases.



Professor David Spendlove
Dinner Speaker, Thursday 6th December

We are pleased to share that Professor David Spendlove, Director of Teaching, Learning and Students / Strategic Director of Initial Teacher Education at the University of Manchester will share his provocative ideas on Technology Education: no ordinary story, definitely worth a dinner ticket!



Ewan McEoin
National Gallery of Victoria Speaker, Friday 7th December

Ewan McEoin is Senior Curator in the NGV's Department of Contemporary Design and Architecture. Join Ewan at our special event **Between Two Worlds | Escher X Nendo** at NGV, and discover how the gallery's vision to become a leading international hub for design is taking shape.

OUR KEYNOTE PRESENTERS AND SPEAKERS

Thursday 6 December

*Assuring the future for Design and Technology by
Embedding Classroom Formative Assessment*
by Dr Eva Hartell



Thursday 6 December

*Applied Design Led Innovation: Why D&T is the
only subject that can deliver*
by Associate Professor Kurt Seemann



Dr Eva Hartell is an experienced STEM teacher and holds a PhD in the area of classroom assessment. Her doctoral thesis concluded that affordance for teachers' assessment practices must be increased. She is currently working with research and development at KTH Royal Institute of Technology in Sweden. Her interest is to develop instruction in order to bridge teaching and learning in K–12 classrooms.

Technology education is by far the most contemporary and rich discipline aiming to prepare learners for the future. It is changing rapidly as society is changing and at the same time technology education is nurturing historical perspectives. To prepare our youths for the future ahead; technology needs to gain greater space and play a larger role in school so that every child will have opportunity to exceed their potential, for them and for society. This is challenging for teachers, as well for researchers on how to support, challenge and understand this quest. Developing instruction is key, and by bridging educational research and practice we have a greater potential to succeed. It is well known that embedding formative assessment in classroom instruction is key to success for student achievement. However this is not as simple as it seems.

This presentation highlights the complexity of embedding formative assessment, and by combining theory and practice also provides suggestions on how to provide affordance for teachers' assessment practices in order to bridge teaching and learning in Design and Technology.

Professor Kurt Seemann is Director at Swinburne's Centre for Design Innovation Research (cdiengage.com.au). He is a specialist in the relationship between people, technology and the environment as a complex, mutually influencing and adaptive system.

Professor Seemann's research operates at two levels: the human scale of holistic technology education, including the processes of design and innovation, and the larger societal scale of systems driving and defining the sustainability of human settlements. He has developed particular expertise in cross-cultural and indigenous technology transfer, design and development research.

Professor Seemann's work in Technacy Genre Theory was foundational to his success in National competitive ARC and CRC research programs, as well as his appointment as Thinker with the Design and Technology Teachers Association Victoria. He is a member of DATTA Australia and the World Society for Ekistics, whose charter restricts membership to 400 worldwide.

This keynote will position the unique and essential educational contribution that only Design and Technology can provide.

OUR KEYNOTE PRESENTERS AND SPEAKERS

Friday 7 December

*Always Was, Always Will Be –
Aboriginal Knowledge
and STEM* by Maddison Miller



Maddison Miller is a Darug Woman and Archaeologist living in Melbourne. Maddi is the co-chair of the Indigenous Advisory Group to the Clean Air and Urban Landscape Hub of the National Environmental Science Program. Maddi works at Heritage Victoria and has been responsible for projects such as the Thomas Mill community excavation. She is a member of Indigenous Architecture and Design Victoria, advocating for Indigenous place making in the built environment. Maddi tells us “Australia is an incredibly diverse continent and this notion of it being one country is relatively new... From Broome to Melbourne there are very different ecologies and experiences, but one thing every mob shares is a deep understanding of the environment and how to exploit that environment to sustain community and culture... I look at what our ancestors and old people were doing and realise they were scientists, architects, engineers and mathematicians. These are things we’ve always been doing and should continue to have a voice in. I think it’s really important to listen to Aboriginal voices and recognise the way they would use the landscape, use space and their ways of life because it’s really applicable to today.”

Saturday 8 December

Designing Change
by Leyla Acaroglu



Sustainability provocateur and cultural protagonist Dr Leyla Acaroglu challenges people to think differently about how the world works. As an award-winning designer, UNEP Champion of the Earth, sociologist, and entrepreneur, she developed the Disruptive Design Method and designs cerebrally activating experiences, gamified toolkits, and unique educational experiences that help people make the status quo obsolete. Her mainstage TED talk on sustainability has been viewed over a million times, and she leads presentations around the world on activating positive social change through creative interventions and systems thinking.

Leyla is an internationally respected keynote speaker and trusted expert, having led thousands of hours of workshops, lectures, activations, and educational experiences around the world. Leyla was a visiting scholar at NYU and an Innovator in Residence at the Center for Social Innovation NYC. She is regularly invited to provide her professional opinions on radio and TV, was a regular judge on the ABC TV show *The New Inventors*, along with a host of international programs.

Saturday 8 December

*The Future of Design and
Technology Education*
by Peter Murphy



Peter Murphy is President of DATTA Australia, a member of the DATTA Victoria committee and STEM Leading Teacher at Northcote High School in Melbourne. He is a member of the Victorian Tech Schools Advisory Panel, and has published teacher support materials.

Peter trained as an industrial designer in his home city of Glasgow, then relocated to Melbourne in 2009, where he studied Secondary Teacher Education. Throughout his career, Peter has been a passionate advocate for the Design & Technologies learning area, and has developed a number of initiatives designed to engage with students, colleagues, school leaders, tertiary education, government and the wider community – all with the aim of shouting loud about the progressive, challenging and relevant nature of our curriculum.

In 2011, Peter created *So You Think You Can Design* as an extra-curricular competition for VCE students at Simonds Catholic College. This has continued to grow, first as a Victorian challenge, and in 2017, as an Australia-wide event. His other initiative, *Design & Technologies Week* has also expanded from a Northcote High School project to become a National initiative.

CONFERENCE PROGRAM

THURSDAY 6 DECEMBER						
8am-8.45am	Registration and Trade Exhibition, ATC Building					
8.45am-9am	Welcome to Country, AMDC Building					
9am -9.10am	Welcome from Professor Hung Nguyen, Pro Vice-Chancellor, Faculty of Science, Engineering & Technology, AMDC Building					
9.10am – 9.15am	introduction by Conference MC John Williams AMDC Building					
9.15am-10am	<i>Assuring the future for Design and Technology by Embedding Classroom Formative Assessment</i> - Keynote Presentation by Dr Eva Hartell, AMDC Building					
10am-10.30am	<i>Applied Design Led Innovation: Why D&T is the only subject that can deliver</i> - Keynote presentation by Associate Professor Kurt Seemann, AMDC Building					
10.30am-11am	Morning Tea, ATC Building					
	PROFESSIONAL PRACTICE TALKS - ATC BUILDING		RESEARCH STREAM – AMDC BUILDING			TRADE EXHIBITIONS – ATC BUILDING
11am-1pm	A. 11.15am-12pm	<i>STEAM for Humanity</i> with AKORN and Enable				Drop in to visit with a range of trade exhibitors for demonstrations of new resources and the latest technologies
	B. 12.15pm-1pm	<i>Developing the next generation of Engineering Professionals</i> with Engineers Without Borders				
1pm-2pm						
2pm – 4pm	C. 2.10pm-2.30pm	<i>Knog – “Unboring Things”</i> by Sam Moore, Head of Brand and Marketing				Drop in to visit with a range of trade exhibitors for demonstrations of new resources and the latest technologies
	D. 2.40pm-3pm	<i>Embracing New Technology in Car Design</i> by Mark Johnson, Ford				
	E. 3.10pm-3.30pm	TBC				
4pm-5pm	Plenary session					
6pm	Conference Dinner					

Wood, Metal & Plastics	Electronics & Systems Engineering	Textiles	All	(P) Suitable for Primary
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FRIDAY 7 DECEMBER										
8am-9am	Registration and Trade Exhibition, ATC Building									
9am-9.15am	Welcome from DATTA Victoria Vice-President Jill Livett, AMDC Building									
9.15am-9.25am	Welcome from Swinburne Senior Secondary College Principal Michael O'Brien, AMDC Building									
9.25am-9.30am	Introduction by Conference MC John Williams, AMDC Building									
9.30am-10.30am	<i>Always Was, Always Will Be – Aboriginal Knowledge and STEM</i> - Keynote Presentation by Maddison Miller, AMDC Building									
10.30am-11am	Morning Tea, ATC Building									
	SCHOOL STREAM – SWINBURNE SENIOR SECONDARY COLLEGE									RESEARCH STREAM AMDC BUILDING
11am-11.45am	1. Improving Teaching and Learning in Primary Design & Technologies by Leanne Compton (P)	2. Innovation and Fostering Creative Thinking by Eddie Aloise King and Sarah Clark (P)	3. Build, Code & Learn WeDO2.0 by Libby Moore (P)	4. Over 30 Exciting STEAM Projects by Pat McMahon (P)	5. Wearable Tech and Beyond by KIOSC (P)	6. Greening your Textiles Class by Zowie Moselen (P)	7. Equity Issues in Technologies Education by Phillippa Loton	8. VR, AR & MR and the Design Industry by Rshan Senanayake	9. Drop in and Learn – SolarBuddy and Metalcraft (P)	
12pm-12.45pm	10. Precious Plastic – Recycling Across the Curriculum by Travis Burroughs (P)			11. Design Thinking 101 by Bridget Hanna (P)			12. The Hexagonal Curriculum and STEM by Dean Carmody and Jane Hubbard (P)		13. Drop in and Learn – SolarBuddy and Metalcraft (P)	
1pm-2pm	Lunch									
2pm-2.45pm	14. Timber Frames with Year 9 by Mark Grech	15. The Museum as Design Inspiration – Create your own exhibit prototype by Mei Liu (P)	16. Drones in the Classroom by Mukesh Soni	17. Systems Engineering – an approach to STEM.... By Colin Chapman	18. Making Contemporary Fabrics from Sewing Threads by Sarah Bulkeley	19. Sustainability Projects in Textiles by Julie Torrance	20. Robust Integration of the Digital Technologies Curriculum in Physical Tech Projects by Nathan Alison (P)	21. Introducing Cyber Security Careers in the Classroom by Renee Hoareau	22. VR for Students - Tour Creator –by Shae Nechwatal (P)	
3pm-3.45pm									23. The Koorie Voices Story by Dr Stefan Schutt (P)	
4pm-5pm	Plenary session									
6pm	Between Two Worlds Escher X Nendo NGV Friday Nights									

Wood, Metal & Plastics	Electronics & Systems Engineering	Textiles	All	(P) Suitable for Primary
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SATURDAY 8 DECEMBER

8am-9.15am	Registration and Trade Exhibition, ATC Building									
9.15am-9.30am	Introduction by Conference MC John Williams , AMDC Building									
9.30am-10am	<i>Designing Change</i> – Keynote Presentation by Leyla Acaroglu, UN Champion of the Earth, AMDC Building									
10am-10.30am	<i>The Future of Design and Technology Education</i> by Peter Murphy, DATTA Australia President , AMDC Building									
10.30am-11am	Morning Tea, ATC Building									
	SCHOOL STREAM – SWINBURNE SENIOR SECONDARY COLLEGE									RESEARCH STREAM AMDC BUILDING
11am-11.45am	24. Product Sketching and Ideation by Anthony Bacon	25. Doing is Learning: Electricity and Gears by Steven Penna (P)	26. Get your crew ready with EV3 Robotics by Libby Moore (P)	27. Teach Coding and Electronics with Micro:bit by Mukesh Soni (P)	28. Fabric Designing – Simple, Safe and Sustainable by Anne Mitchell (P)	29. Make Virtual Reality your Classroom Reality by Shae Nechwatal (P)	30. Technologies Education for the Primary Years by Wendy Jobling (P)	31. STEM – Increasing Pupil Engagement by Bringing Real-World Problems into the Classroom by Simon Tilley (P)	32. Drop in and learn – SolarBuddy and Metalcraft (P)	
12pm-12.45pm						33. Learning Outside the Classroom – STEM USA Tour by Matt Schlueter	34. The Challenges in Designing a Teacher Education Program for D&T by Dr Mike Brown (P)	35. Benefits of ResourceSmart Schools for Design & Technologies Teachers by Ellen White & Michelle Barton (P)	36. Drop in and learn – SolarBuddy and Metalcraft (P)	
1pm-2pm	Lunch									
2pm-2.45pm	37. The Impact of Augmented Reality and Virtual Reality on D&T by Brenden Davidson (P)	38. Competing with Robots by Travis Burroughs (P)	39. The Visual Language of Design by Jill Livett (P)	40. Pathways from Digital Technologies to Engineering by Seven Vinton (P)	41. Build and Takeaway an Infrared Remote-Controlled Microcontroller by Pat McMahon (P)	42. Ideas for Teaching Sustainability Units by Suzanne Arnott (P)	43. Winter is Coming – Textiles Design Brief for Years 7-8 by Pam Hyden	44. Teaching Design using On-Shape by Brother Barry Parker	45. STEM by Design: Developing Cross-Curricular Resources using Design Thinking by Peter Murphy (P)	
3pm-3.45pm		46. 3D Design and 3D Printing with Integrated STEM by Maged Hegazy (P)							47. Design Led Innovation with a 6D Solution by Angela Colliver (P)	
4pm-5pm	Plenary session									

***Note all conference delegates are welcome to attend the DATTA Aus AGM, taking place at 3pm in the ADMC Building.**

SCHOOL STREAM – PROFESSIONAL PRACTICE TALKS – THURSDAY 6 DECEMBER



A. STEAM FOR Humanity with AKORN Educational Services and Enable

In a recent World Report, it is estimated that 1 in 5 people globally has a disability. Many of these people experience social exclusion, discrimination and lack of access to fully participate in society. For the past 3 years, AKORN Educational Services and Enable have worked with female secondary students in the *Full STEAM Ahead – Girls Designing an Inclusive Society* Program, supporting them to collaborate to generate ideas and develop assistive and enabling technologies that will overcome these barriers. Join Akorn’s Georgene Bridgeman to discover how to engage your students in user-centred design and creative problem solving. Discover more at <http://www.akorn.com.au/programs-and-services/fsa/>

B. Developing the Next Generation of Engineering Professionals with Engineers without Borders

Engineers Without Borders believe that engineering and technical professions have a significant role to play in solving global challenges. They aim to inspire the next generation of professionals through a diverse range of opportunities which include school resources and hands-on workshops, all focusing on the power of humanitarian engineering to create positive change. Join Volunteer Outreach Lead Anna Cain and be inspired to introduce real-world STEM challenges in your classrooms. Visit ewb.org.au for more information.

C. Designing “Unboring Things” by Knog

Knog is an award-winning Melbourne design brand creating urban-flavoured tech for the road, trail and outdoors. Founded in 2002 by Designer Hugo Davidson and engineer Mal McKechnie, their vision is to make “unboring things”. Knog seeks out what is boring, inconvenient and ugly, and re-thinks how these simple - or complex - products look, feel and function. The famously simple *Oi bell* launched on Kickstarter, and the modular PWR bike light range are examples of that spectrum of design. Join Head of Marketing and Brand Manager Sam Moore to discover more about their PWR range which earned them a *Finalist – Product Design* slot in the 2017 Premier’s Design Awards. For more information, see <https://www.knog.com.au/>

D. Embracing New Technology in Transport Design with Ford

As technology steadily advances, the features in automobiles become more cutting edge, and this is certainly the case with Ford – whether it is the use of Virtual Reality in the product development stage, or new safety features that integrate with a driver’s smartphone. Mark Johnson is Ford’s Senior Interior Designer and a lecturer in Mobility Design at Monash University. Join Mark to explore what the future of transport design will look like in this rapidly evolving sector.

E. *This session to be confirmed*

SCHOOL STREAM - WORKSHOP OVERVIEWS – FRIDAY 7 DECEMBER



1. Improving Teaching and Learning in Primary Design and Technologies by Leanne Compton

Suitable for All

Primary and Secondary

When planning a teaching and learning program, it helps to know the typical developmental steps students go through in their learning. This session will explore how the Victorian Curriculum F-10 was used in combination with teacher expertise to describe more granular steps between achievement standards and support student learning progressions in Levels 3-4 Materials and Technologies. This session will explain how developing a formative assessment rubric enabled the articulation of the fine grain steps and teased apart what was being taught and learnt. The use of a formative assessment rubric and examples of student work will be presented.

Leanne is the Curriculum Manager of Design and Technologies at the VCAA. She has responsibility for a range of studies including Product Design and Technologies and Systems Engineering.

2. Innovation and Fostering Creative Thinking by Eddie Aloise King and Sarah Clark

Suitable for Wood, Metal, Plastics and Electronics/Systems Engineering

Primary and Secondary

This session will engage participants in a series of creative thinking exercises. It is designed for teachers and informal learning professionals to support young people to better engage in STEM-based programs and activities. The structure of the workshop centres on Questacon's cycle of innovation: think, make, try, refine. Each activity explores a different approach to creative thinking to aid in promoting a process of innovation, specifically:

- Techniques to come up with ideas
- Exploring material properties
- Testing and refining a physical prototype.

Eddie and Sarah are Innovation Leaders with Questacon's Smart Skills Initiative. They coordinate a large team of inquiry learning facilitators to deliver engaging, innovation-focused workshops in schools around Australia, via video conference and from The Ian Potter Foundation Technology Learning Centre in Canberra.

3. Build, Code and Learn WeDo 2.0 Robotics by Libby Moore

Suitable for Electronics/Systems Engineering

Primary (Grades 1-4)

WeDo 2.0 is a robotic concept that provides endless opportunities to engage students in coding, problem solving and designing solutions. In this workshop you will build a robot and program it using a motor and sensor. Experience how to follow, describe and represent a series of steps and decisions needed to solve simple problems. Strongly linked to the new digital technologies curriculum, WeDo 2.0 develops coding and computational thinking in Early Years students.

Libby taught in Victorian schools for 15 years before taking on the position as a Curriculum Consultant. In 1992 she became an Education Consultant for LEGO Education. It was during this time that Libby's passion for LEGO and the excellent educational benefits to teachers and children of 'hands on minds on learning' began. Libby established Moore Educational as a national LEGO Education distributor. She is now the director of LEGO Education Centre's in Melbourne and Brisbane, where a unique learning environment engages children and teachers in creativity, innovation and technology for 21st Century learning.

4. Over 30 Exciting STEAM Projects – Show and Play by Pat McMahon

Suitable for Electronics/Systems Engineering

Primary, Secondary and Tertiary

Participants will each have a play in turn, at over 30 of Pat's STEaM Projects. They will have the opportunity to ask questions, photograph and take "How to Build" sheets on various projects that interest them back to the classroom.

Pat has had over the last 15 years, over 3,000 students from year 7 to 10 build a Picaxe Microcontroller and control some great award winning models, samples of which will be on display. He has run workshops for over 700 teachers and has presented at libraries, Men's Sheds, Kinders, Primary, Secondary Schools & Universities. Pat has been fortunate to have shown his students work overseas and has received 7 various International, Australian State and Territory, Victorian, Regional Innovative/ Outstanding/ Excellence Teacher of the Year Awards.

5. Wearable Tech and Beyond by KIOSC

Suitable for Textiles and Electronics/Systems Engineering

Primary and Secondary

Explore elements of wearable technology using conductive thread, microprocessors and common items around your technology classroom. Participants will create a wearable item and extend their design to incorporate new technologies and applications. We will also explore how wearable technology provides solutions to everyday problems and contexts. **Participants should bring their own laptops.**

KIOSC is an innovative Trade Training and Discovery Centre at Swinburne, Wantirna. Catering to Year 7-10 students in the Knox area of Victoria, KIOSC has a focus on STEM and preparing students for future industry.

6. Greening your Textiles Class by Zowie Moselen

Suitable for All

Primary and Secondary

Do you want your textiles students to tackle global issues in the class? Do you want to deliver sustainability programs and address issues like waste and pollution in the textiles industry? Join this hands-on workshop with Lincraft's Zowie Moselen, and get inspired how to use the plastic bag ban as inspiration, how to upcycle textiles items, and much more!

Zowie is the Creative Coordinator for Lincraft, helping create creative craft, knitting and sewing projects for all skill levels. Prior to this, she was a VCE PD&T (Textiles) teacher and taught for 8 years in various schools in Queensland and Victoria. She recently co-authored for the Cambridge Product Design & Technology textbook for the new study design in Victoria.

7. Equity Issues in Technologies Education by Phillipa Loton

Suitable for All

Secondary

This workshop will outline initial research into problems relating to equitable access to Technology / STEM education in Secondary Schools. Phillipa will present information about current findings and research into this problem, and ways in which it could be addressed. Participants will identify problems and opportunities in their own schools relating to Technologies education, and explore where they may find support.

Phillippa has been teaching at Bacchus Marsh Grammar for over seven years and previously taught at RMIT. Most of her teaching practice has been in Textiles and Art, however she recently had the opportunity to teach 3D printing. She has started a PhD researching equity issues related to Technology / STEM education in Victorian Secondary schools at La Trobe University.

8. The Future of Education is Design - VR, AR and MR, 3D Printing in the Classroom by Rashan Senanayake

Suitable for All

Secondary and Tertiary

Equip yourself with the latest knowledge in VR and other technology, teaching strategies, relevant tools and resources as well as the design industry - gain the understanding on why DESIGN is the future of education! Explore how to integrate design through our thinking, utilising the latest technology, teaching and language in the classroom and discover VR (Virtual Reality), AR (Augmented Reality) and MR (Mixed Reality), along with integrated Design Thinking with the use of BIM modelling, 3D Printing, Laser cutting, prototyping and other STEaM skills.

Rashan is the founder and CEO of Inspired Education Australia, which focuses on students and teachers in the transition of career development and teaching that is centred on Design Thinking and other skills. Rashan graduated in (Design) Architecture in 2011 and completed his Master in Architecture. He left conventional practice to pursue his various business ventures. Since then, Rashan has developed a reputation for his entrepreneurial thinking and leading a variety of projects in a wide variety of fields and industries. He is now an author and public speaker who has spoken at many events across Australia, featured on podcasts and been published in various design journals in Australia. Rashan is also currently teaching first and fourth year Architecture students at QUT, an Associate Fellow and the youngest board member of the Australian Green Development Forum.

9. Drop in and Learn with SolarBuddy and Metalcraft

Suitable for All

Primary and Secondary

Friends of DATTA Australia **SolarBuddy** and **Chevington Tools** will be on hand throughout the conference to offer fantastic learning experiences for Technologies educators from all levels.

SolarBuddy is an Australian charity dedicated to educating and empowering the next generation to change the lives of children living in energy poverty through its innovative education and engagement programs. Drop by to explore how your students could get involved in this initiative – a wonderful example of creative problem solving.

Chevington Tools have been supplying Metalcraft tools to Australian schools for more than 20 years. Join Greg Cowie to discover how, with these safe and easy to use tools, students can create quality metalwork projects without needing to heat metal.

10. Precious Plastic – Recycling Across the Curriculum by Travis Burroughs

Suitable for Wood, Metal, Plastics

Primary and Secondary

Precious Plastic is a global community of hundreds of people working towards a solution to plastic pollution. Knowledge, tools and techniques are shared online, for free. Participants at this workshop we will explore all the necessary information needed to start their own Precious Plastics centre and how it can be adapted across the curriculum.

Travis is DATTA Victoria Treasurer, the Templestowe College Federation of Schools STEM Learning specialist and the President of In2robotics.

11. Design Thinking 101 by Bridget Hanna

Suitable for All

Primary and Secondary

Many large companies across the world are able to innovate continuously because they have adopted a culture of design thinking. Design Thinking is an approach to solving problems. It integrates possibilities of digital technologies, the requirements of a project or task and holds at its core the needs of people. It is extremely useful when working on complex problems with your students. This workshop will adopt a hands-on approach to re-framing a problem to encourage creative thinking following the often nonlinear five stages of the design thinking process, empathise, define, ideate, prototype and test.

Bridget manages digital education and learning programs across Melbourne Museum, Scienceworks and the Immigration Museum. She is an enthusiastic creative arts producer, curator, author and educator. She uses her background in screen and cultural studies, and screen literacy to create original and practical approaches to developing the multimodal talents of audiences, enabling them to communicate meanings in innovative ways.

12. The Hexagonal Curriculum and STEM by Dean Carmody and Jane Hubbard

Suitable for All

Primary

In this workshop, participants will investigate how we can leverage the Hexagonal Curriculum approach to plan and implement a STEM inquiry. Dean and Jane will look at incorporating a range of curriculum areas with a particular focus on Technologies. We look at how to manage the complexities of a cross curricula approach and we also explore assessment, rubrics and how to develop BIG ideas that make a difference in the world.

Dean has been teaching for nearly 25 years and has worked in Primary, Secondary and Tertiary environments while also working in Government, Private and Catholic sectors. He currently works at Catholic Education Melbourne as the eLearning Consultant in and works with many schools in the Northern Region of Melbourne. Jane has been teaching for 15 years and worked in the UK, London and across Victoria. She has a particular interest in teacher professional development and currently works as a learning consultant in Mathematics for Catholic Education Melbourne.

13. See Workshop 9 for a description

14. Timber Frames with Year 9 by Mark Grech

Suitable for Wood, Metal, Plastics

Secondary

This hands-on workshop demonstrates how Year 9 students design and construct a timber frame using corner halving joints and biscuit joints. They then have to customise their frames to suit a specific need.

Mark has been teaching Design and Technologies at Aitken College for the last five years where he has had the opportunity to experiment and trial a host of design projects using 3D printing and laser technology. He is a wood specialist but has had lots of experience with a host of CAD packages.

15. The Museum as Design Inspiration – Create your own Exhibit Prototype by Mei Liu

*Suitable for Wood, Metal, Plastics and Electronics/Systems Engineering
Primary, Secondary and Tertiary*

Participants will use exhibits at *Scienceworks*, the Victorian Science and Technology Centre as inspiration for a mini design sprint. Get a brief insight into some of their most interactive exhibits and try your hand at creating something that can sense and do with BBC Micro:bit and the Grove Inventor Kit. Program with the online block editor or flex your JavaScript and Python skills. There will be an exhibition at the end of the workshop with the creations.

Mei manages STEM Programs at Scienceworks - Museums Victoria. Mei is primary trained and has been working in Programs, Education and Outreach at science centres and museums for the past 10 years. A Maker Movement enthusiast, Mei is keen to learn and share about all things Design and Tech!

16. Drones in the Classroom by Mukesh Soni

*Suitable for Electronics/Systems Engineering
Secondary and Tertiary*

This session will focus on one of the first programmable drone in the world. Participants will work in pairs to experience a drone programming and flight experience. You should have basic knowledge of programming. This hands-on experience will take you through programming drone to complete given missions! **Participants should bring their own laptops.**

Mukesh looks after the education courseware development and training of educators at Pakronics. He is a PhD researcher at Melbourne University and has been associated with technology education in universities and schools for the past 7 years. Mukesh brings in over 15 years of experience in technology, research and development from his earlier association with multi-national companies like General Electric, Bosch and Tektronix.

17. Systems Engineering: An approach to STEM that creates digital portfolios to reward risk-taking habits during learning opportunities by Colin Chapman

*Suitable for Electronics/Systems Engineering
Primary and Secondary*

Rewarding risk-taking effectively and efficaciously continues to challenge participants in STEM learning opportunities. This presentation is concerned with showcasing the Victorian Certificate of Education Systems Engineering Study Design and its innovative assessment programme that rewards participants for 'failure' as they conceptualise, investigate and develop intentions towards solutions, then carry out plans and evaluate any results. This workshop will present open-source, accessible applications that may be harnessed to create interactive digital portfolios. Learning participants in STEM may use these to narrate their creative journey, inclusive of successes and failures, as they seek to provide evidence of achievement in their learning. We will unpack a collection of real digital portfolios to discover how learners valued getting things wrong on their way to getting things right. Authentic reward for risk-taking is foregrounded in this workshop, for learning environments that explore systems approaches to developing solutions to real problems. **Participants should bring their own laptops.**

For 4 years Colin taught Mathematics, Physics and Chemistry courses for the International Baccalaureate Diploma in Switzerland, and was awarded the 10K Euro Google RISE Award for his development and implementation of the Grlbotics Robotics program in Europe. Over the past five years he has set up a Systems Engineering Centre at Caroline Chisholm Catholic College (CCCC), taking responsibility for curriculum and pedagogical development in Robotics and Physical Computing Education in a MakerSpace environment. Colin continues to engage emerging engineers, mathematicians and roboticists through the development of multidisciplinary programs that challenge participants from the early years of schooling through to pre-University. He is the Head of Learning - Mathematics at CCCC. He holds a BEd (ACU) and MSc (Macquarie) and is currently undertaking an MA (Deakin).

18. Making Contemporary Fabrics from Sewing Threads by Sarah Bulkeley

*Suitable for Textiles
Secondary and Tertiary*

Using a combination of regular sewing threads, machine embroidery threads, wool tops, silk waste, scraps of fabric and dissolvable stabilisers, we will create wonderful new fabrics and contemporary laces from scratch. College and middle-school Textiles classes will go nuts for this technique and it's very addictive for teachers as well!! **Participants should bring their own sewing machines with a darning or embroidery foot.**

Sarah studied Fashion at RMIT and then had experience working in the rag trade here in Melbourne. In 1990 she began teaching Fashion and Textiles at Canberra Girls' Grammar School. In 1997 she had a tree change and moved to Tasmania where she taught Textiles and Art for 8 years, then returned to Melbourne where she has been teaching Textiles, Art and Ceramics at Lyndale Secondary College since 2005. Throughout her teaching career Sarah has continued to produce her own work and currently runs a micro-business on Etsy.

19. Sustainability Projects in Textiles by Julie Torrance

Suitable for Textiles

Secondary

Julie has been working on a couple of projects to help students understand the importance of recycling clothing into other useful items. She has developed projects to make a pencil case out of old jeans and a shirt into shorts. Most importantly, this gave students a better understanding of the huge problem facing the Fashion Industry at the moment. Participants will use sewing machines and overlockers as part of this workshop.

Julie moved from the UK two years ago. She has spent eight years teaching and twenty years as a designer in the Fashion Industry, designing knitwear for major high street retailers. Having seen the huge lack of ethical manufacturing world-wide and the requirement now facing the industry to use sustainable fabrics, she is passionate about making her practice sustainable.

20. The Robust Integration of the Digital Technologies Curriculum in Physical Tech Projects by Nathan Alison

Suitable for All

Primary and Secondary

Designing physical tech with electronics, wearables or robotics is a great way to address content descriptions from both Design and Technologies and Digital Technologies curricula. However, these projects can lack the expected complexity when it comes to key skills like designing algorithms and manipulating data. In this hands-on workshop, we will look at how to push Computational Thinking further with electronics at Levels 5-6, 7-8 and 9-10. What kind of code is expected at these levels, and how can students integrate it into a physical tech solution? BBC Micro:bit will be used, but concepts are applicable to other platforms like Arduino. **Participants should bring their own laptops.**

Nathan is the Professional Learning Coordinator at Digital Learning and Teaching Victoria (DLTV), the non-profit professional association for Digital Technologies teachers in Victoria. Nathan taught Digital Technologies, VCE Computing and Software Development in Victoria for 11 years before beginning work for DLTV. He brings a background in Computer Systems Engineering and years of hobby coding, as well as a keen desire to help teachers with more complex Computer Science concepts through clear explanations and relevant activities.

21. Introducing Cyber Security Careers in the Classroom by Renée Hoareau

Suitable for All

Secondary

This workshop is aimed at teachers interested in bringing cyber skills and career awareness into the classroom. Teachers will use both hands-on and digital technologies to complete easy cyber challenges including Understanding Malware, cracking Passwords, Email Headers and Cyber Risk Assessment. They will use their problem-solving, critical-thinking, creativity and collaboration skills, and build confidence with cyber lexicon. Teachers will be introduced to LifeJourney's online Cyber Education programs including the Optus Cyber Security Experience and ASD CyberEXP to introduce cyber career awareness into the classroom. The workshop will also showcase LifeJourney's Cyber Teacher Professional Learning program. **Teachers are encouraged to bring their own digital devices with internet connection.** Participants will receive free registration to the LifeJourney programs and through the online Day of STEM program.

Renée is Director, Education and Engagement for LifeJourney International, the company behind the Day of STEM and ASD CyberEXP online programs. Renée's primary role is to build awareness and adoption of the Day of STEM and ASD CyberEXP programs among the education community. The program aims to inspire students, their teachers and parents to pursue STEM and cyber security career pathways through an interactive online experience led by the nation's leading industry mentors. Renée has extensive experience working in secondary schools, tertiary institutions and teaching organisations. Renée has been President of the Councils for Professional Teaching Associations and holds several advisory roles for driving change and leadership for 21st century learning, strategies for building strong partnerships and leveraging technologies for in-demand digital futures.

22. Virtual Reality for Students using Tour Creator – You be the Guide! By Shae Nechwatal

Suitable for All

Primary and Secondary

Creating Google Expeditions for Life Saving Victoria has allowed Shae to combine meaningful content with Virtual Reality to create an engaging learning experience for students. The release of Google's Tour Creator has made it possible for students to create their own expeditions and engage with technology in a whole new way. Join Shae to learn how you and your students can create unique virtual reality tours that can be shared across the globe. The application and reach of this technology is truly only limited by your imagination. **Participants should bring their own laptops.**

Shae is the Technology Leader at Merri Creek Primary School and is passionate about embedded digital technologies across all areas of the curriculum. Shae has worked with agencies beyond the school to design and create Google Expeditions, and she regularly consults both in and out of the education setting about how technology can be used in innovative and engaging ways.

23. The Koorie Voices Story – how a community-based Indigenous Art & Technology initiative has evolved and grown over time by Dr Stefan Schutt

Suitable for All

Primary and Secondary

The Koorie Voices project started in early 2018, working with local Aboriginal communities to produce artwork installations that use conductive paint and circuits to trigger audio stories. The project has since grown in richness and community involvement; it now consists of two works – a Coolamon (carrying vessel) and Message Stick (communication device) - made of redgum from the Separation Tree in the Melbourne Botanic Gardens. These objects are being “wired up” with resin-encased objects and touch/light sensors that will trigger stories of identity and culture recorded by local Indigenous people. This workshop tells the story of this evolving project.

Stefan is director of the Whittlesea Tech School, a high-tech STEM learning hub funded by the Department of Education and Training and located in the Epping campus of Melbourne Polytechnic. Stefan is an educator and researcher working at the intersection of technology and community. He is the co-founder of The Lab, a national network of technology clubs for young people with autism, a co-owner of technology start-up vPlay, and a former multimedia TAFE teacher.

SCHOOL STREAM - WORKSHOP OVERVIEWS – SATURDAY 8 DECEMBER

24. Product Sketching and Ideation by Anthony Bacon

Suitable for Wood, Metal, Plastics

Secondary and Tertiary

This practical session will focus on developing product sketching and ideation techniques for folio development in teachers and students.

Anthony formally trained as an Industrial Designer. He has been working in Education along the Mornington Peninsula for the past 20 years teaching Design to students from Year 7 to 12. His background in design also includes expertise in furniture design, CAD/CAM and materials technologies in timber, metals and plastics.

25. Doing is Learning - Electricity and Gears by Steven Penna, Aaron Penna and Darren Paxton

Suitable for Wood, Metal, Plastics and Electronics/Systems Engineering

Primary and Secondary

Participants will take a trip into the exciting worlds of electricity and gears, where they will learn how these connect to make movement by changing electrical energy into mechanical energy. They will then make a solar vehicle and modify it to achieve the highest speed. This is knowledge that can be applied in Grade 5, 6 or 7 classrooms.

Steven is a Technology teacher with 30 years' experience and is now the Associate Director of LAPtek Pty Ltd. Aaron is the Director of School Electronic supplies. Darren is a Technology team leader with 20 years' experience.

26. Get your Crew Ready with EV3 Robotics by Libby Moore

Suitable for Electronics/Systems Engineering

Primary and Secondary (Grades 5-12)

Ignite student engagement and energise learning through the use of LEGO Mindstorms Education EV3 in the classroom. This workshop will empower teachers to challenge their students to apply coding and problem solving as they construct robotic solutions to solve actual Space Challenges. Participants will become confident to implement digital solutions as simple visual programs involving branching, iteration and user input. Have your students exercise creative problem solving and team work, while deepening their understanding of digital and design technology processes.

Please see Workshop 3 for Libby's biography.

27. Teach Coding and Electronics with Micro:bit by Mukesh Soni

Suitable for Electronics/Systems Engineering

Primary and Secondary

Micro:bit is most popular with teachers who are starting out with technology classes. It offers multiple programming languages like Graphical, JavaScript and Python, and is also very easy to learn and teach. Participants will complete a range of hands-on exercises in Graphical programming. **Participants should bring their own laptops.**

Please see Workshop 15 for Mukesh's biography.

28. Fabric Designing – Simple, Safe and Sustainable by Anne Mitchell

Suitable for Textiles

Primary, Secondary and Tertiary

Suitable for any ability and year level, this hands-on workshop will give participants skills immediately transferable to the classroom. Using non-toxic colours, we will create a range of stunning fabrics, exploring a variety of techniques to prepare one-colour and multi-colour samples to inspire your students' individuality. We will discuss classroom set-up, and simple equipment that can be brought from home. Support notes will be provided, nothing to bring except a pen and an active mind.

Anne is a former High School Teacher. With a strong urge to share her skills, she began teaching fabric designing with an Australian company. The love of what she had done for many years, combined with experience in retailing through her family history, led her to start her own business, Genesis Creations in 1999. She has taught fabric designing for over 45 years, travelling extensively across Australia and New Zealand to share these skills.

29. Make Virtual Reality your Classroom Reality by Shae Nechwatal

Suitable for All

Primary and Secondary

Students using VR to experience a virtual world is one thing, but experiencing an interactive VR world they have created is a game changer! It has never been easier for students to design, create and code interactive VR content. The potential use and scope of VR in classrooms is only limited by your imagination. Join Shae in this hands-on workshop to learn how you and your students can create interactive Virtual Reality experiences with an easy to use, online platform.

See Workshop 21 for Shae's biography.

30. Technologies Education for the Primary Years by Wendy Jobling

Suitable for All

Primary

In this hands-on session, participants can use a design brief to design and make – investigate, generate, produce and evaluate – a product that allows them to draw on knowledge from other curriculum areas, and science in particular.

Wendy is a lecturer in Technologies education and Science education at Deakin University. Prior to this she taught in primary schools and delivered a number of technology professional learning programs to primary teachers. Her doctorate focused on factors affecting the implementation of Science and Technology in primary schools. She has recently co-authored the book Technologies Education for the Primary Years.

31. STEM – Increasing Pupil Engagement by Bringing Real-World Problems into the Classroom by Simon Tilley

Suitable for All

Secondary

This workshop looks at a range of STEM projects that have been successful in the classroom as a Year 9 STEM elective class and at a whole year level. Links are made between the various disciplines, but rather than restricting to the traditional STEM elements it also draws upon whatever subjects are needed to solve the problem. Although these projects have generally been used for Year 9 they are adaptable to any year level and the shorter 1¾ hour challenges have also been successfully used for Year 6 Primary school competitions.

Simon has a Degree in Furniture and Craft Management (Hons) and worked as a cabinet maker for 6 years, producing one off pieces of furniture including the G7 Summit table. He undertook a PGCE in Design and Technology and spent two years teaching Design and Technology in a London Comprehensive, then 16 years teaching at Eton College as a Design and Technology teacher. For the last 5 years he has taught D&T and Mechatronics at Hale School in WA where he instigated their STEM program. For the last 2 years he has been a member of the DATTA WA committee, with the last one serving as Vice-President.

32. See Workshop 9 for a description

33. Learning outside the Classroom – USA STEM Tour by Matt Schlueter

Suitable for All

Secondary

Share Matt's experience of travelling to the USA with students to look at STEM activities. This tour took in a number of places including the Kennedy Space Center, Hoover Dam, iFly, EPCOT and the Intel Museum.

Matt is a Design and Technology with nearly 20 years' experience in both Regional and Metropolitan Schools in Western Australia. He is currently at Peter Moyes Anglican Community School in Mindarie, a K-12 school of around 1,500 students which is located in the Northern Corridor of Perth.

34. The Challenge of Designing a Teacher Education Program for Design & Technologies Education by Dr Mike Brown

Suitable for All

Primary, Secondary and Tertiary

This session will discuss the design of university-based teacher education programs for the preparation of secondary teachers in the field of Design and Technology. The first part of the session will be used to identify and discuss the parameters that guide the design of these programs. The second part of the session will review a range of different models that are in use across Australia and discuss how these meet the design criteria and parameters. Finally, it will review current research and evidence on teacher education to consider what may be possible consideration for Design and Technologies teacher education in the future.

Mike is a Senior Lecturer and Program Co-ordinator of a dedicated undergraduate Design and Technologies teacher education degree program.

35. Benefits of ResourceSmart Schools for Design & Technologies Teachers by Ellen White and Michelle Barton

Suitable for All

Primary and Secondary

Find out how the ResourceSmart Schools program may be used as a vehicle for accessible, authentic and engaging learning for technologies and sustainability curriculum. View case studies of successful school culture transformation where STEM and technologies are valued within the context of ethical and critical design for preferred futures.

Ellen is an experienced Biology and General Science teacher. For the last five years she has coordinated the ResourceSmart Schools program in the Loddon-Mallee region of Victoria.

Michelle is the ResourceSmart Schools Facilitator for delivery partner Loddon Mallee Waste and Resource Recovery Group. Michelle has experience teaching Foundation through to VCE as a Generalist and Math and Science specialist.

36. See Workshop 9 for a description

37. The Impact of Augmented Reality and Virtual Reality on Design & Technologies Education by Brenden Davidson

Suitable for Wood, Metal, Plastics and Electronics/Systems Engineering

Primary, Secondary and Tertiary

Immersive Technologies such as Virtual and Augmented Reality are now readily available to schools and have the potential to revolutionise Design and Technologies Education. Research is showing that the use of immersive technologies can increase student motivation, enhance visual and spatial awareness, accelerate the design process, foster creativity and allows students to communicate their ideas in new and improved ways. This workshop will provide hands-on demonstrations on how to create immersive experiences, how to use AR and VR as an aid in the design process and as a tool to display and interact with designs.

Brenden worked in the design industry for a number of years before completing a Diploma of Education. He has extensive experience in the teaching of digital fabrication and Computer Aided Design (CAD) and continues to explore the opportunities that emerging technologies offer in technology education. Brenden is currently undertaking a Masters of Education, majoring in ICT, to further his knowledge of emerging technologies.

38. Competing with Robots – How to Engage Students in STEM by Travis Burroughs

Suitable for Wood, Metal, Plastics and Electronics/Systems Engineering

Primary and Secondary

At this workshop participants will explore how competitive robotics engages students in STEM subjects and how it drives them to take control of their own learning. We will also be looking at how schools can get involved with competitive programs.

Please see Workshop 10 for Travis' biography.

39. The Visual Language of Design by Jill Livett

Suitable for Wood, Metal, Plastics and Textiles

Primary and Secondary

Using the Design Elements and Principles, we'll look at the designs of the 20th-21st centuries, finding common themes and threads running through furniture and clothing design. Then, get your creative hats on and develop models using the work of others as a starting point to reimagine and re-invent simple objects.

Jill has been around DATTA Victoria and D&T Teaching for a long time and still finds it exciting. She is currently DATTA Victoria's Vice-President. Jill teaches in the Wood, Plastics and Textiles areas, and has presented and written support materials for VCE PD&T.

40. Pathways from Digital Technologies to Engineering by Seven Vinton

Suitable for Electronics/Systems Engineering

Primary, Secondary and Tertiary

This session provides a hands-on opportunity to engage in projects aimed at building systems thinking, computational thinking, problem solving ability, and subject specific literacy and numeracy. These skills can help ensure that students are adequately equipped and inspired to succeed in engineering subjects in senior secondary and tertiary education. Key projects such as boom-gates, flying wings, sorting machines, and RC robots which have been used successfully from Years 5 to 12 will be covered. Discussion will revolve around the building of thinking and vocabulary, and ways to incorporate targeted computer programming languages such as C++. **Participants should bring their own laptops.**

Co-inventor of the ARD2-INNOV8 shield for Arduino, Seven has dedicated the past 6 years towards providing support for students and teachers with digital technologies, and creating solutions which make digital coding easier for students to learn. He presents annually at the DATTA Victoria conferences, DLTV and regional conferences, and has co-authored Digital Technologies text books for Nelson Cengage. Seven has held a leadership position at Oberon High School for the past 19 years, and has successfully implemented many curriculum initiatives during that time, including establishment of a whole school improvement culture.

41. Build and Takeaway an Infrared Remote-Controlled Microcontroller by Pat McMahon

Suitable for Electronics/Systems Engineering

Primary and Secondary

Participants will build a simple universal Infrared Remote-Controlled Microcontroller that will play 12 tunes and run 10 LEDs when selected from the remote. It will introduce participants to a simple 14 component microcontroller that is easy to build, code in BASIC and can easily run hundreds of fantastic STEaM Projects.

Please see Workshop 4 for Pat's biography.

42. Ideas for Teaching Sustainability Units by Suzanne Arnott

Suitable for Textiles

Primary and Secondary

This workshop will discuss how and why we need to teach sustainable practices. How to reuse, reduce and recycle to give a second life to objects that would end up in landfill is central. Participants will use a range of "waste" to create something new.

Suzanne has been a presenter in a range of digital and traditional technologies over the years. A passion to create a sustainable future for her children is driving her to make interesting potential teaching units. She has taught Textiles since 1986, as well as dabbling in digital technologies from the late 1990s. She also teaches a range of Visual Arts subjects across Years 7-12.

43. Winter is Coming – a Textiles Design Brief for Years 7-8 by Pam Hyden

Suitable for Textiles

Secondary

Analysing commercial pyjamas and researching the history of Peter Alexander as a designer, creates an opportunity for junior students to plan and produce their own flannelette pyjama pants. Designing an individual garment promotes design elements and principles as well as body sizing and materials. Comparison of classroom production skills to industry high mass volume techniques, and the introduction of the overlocker as well as other components of a design brief are included. Participants will work through the design brief with some sample work included, to then take home an engaging design brief for their own students.

Pam is a passionate and experienced textiles teachers who has taught in a range of schools. She enjoys sharing and learning from fellow colleagues in the varied and huge world of textiles. Her passion is garment construction - from workbags in Year 7 through to couture work. Pam loves the challenge of producing products from designs or images. She enjoys working with textiles as there is no specific right or wrong way –processes depend upon the outcome of the garment or product that she is looking for.

44. Teaching Design Using On-Shape by Brother Barry Parker

Suitable for All

Secondary

Learn to teach design using professional grade, state-of-the-art, parametric 3D modelling software for free (education licence) without the need to install expensive or resource-hungry software. Real world 21st century design is collaborative, with OnShape allowing this at both the part and model level. It allows students to share their designs and innovative ideas with great flexibility. Students can also prototype without the need to completely redesign, and can design with the ability to modify at any point, allowing for greater creativity. Participants will also explore STEM extensions such as teaching mathematical principles through CAD software and 3D Printing. **Participants should bring their own laptops.**

Prior to Br Barry joining the Salesians and teaching Technology, he worked for 21 year in the manufacturing industry. Has been at the forefront of CAD/CAM and CNC technologies in the Aluminium Extrusion industry since the mid-1980s, and had held management positions in Design and CNC departments, taking a 100% hands-on machine shop to a 95% CNC factory. He has a Graduate Diploma in Technology Education, has taught Systems Engineering, Product Design and Digital Technologies. He has introduced students and staff to 3D printing, laser cutting, robotics and coding via Minecraft. He is passionate about where technology is heading in the future and how education can play a leading part in how and what we use in the future.

45. STEM by Design – Developing Cross-Curricular Resources using Design Thinking by Peter Murphy

Suitable for All

Primary and Secondary

Join Peter, the STEM Leading Teacher from Northcote High School, as he takes participants through his school's innovative STEM program. Entitled STEM by Design, Northcote teachers from different faculties, including D&T, Maths, Science, Art and P.E, have been working together to develop cross-curricular resources based on the UN Sustainability goals using Design Thinking.

Peter trained as an Industrial Designer in the UK, and moved to Melbourne in 2009 to pursue a Graduate Diploma in Secondary Education at VU. He is currently President of DATTA Australia, as well as Design Faculty Leader and STEM Leading Teacher at Northcote High School. Peter has published teacher support materials and has also been part of the VCAA expert panel charged with reviewing and trialling the National curriculum for Design & Technologies. He is the creator of the So You Think You Can Design student competition and in 2016, he helped to develop Victoria's Design & Technology Week, which is now a National program.

46. 3D Design and 3D Printing with Integrated STEM by Maged Hegazy

Suitable for All

Primary, Secondary and Tertiary

For inspiration, check out Maged's work here! <https://www.youtube.com/watch?v=0nYWqhjziZg&feature=youtu.be>. Many K-12 schools have already invested in 3D printers to improve their approach to STEM Education, however, this has been impaired by the complexity of the existing available 3D design software, which is not easy for students to use. To solve this problem we developed an easy 3D design application for kids, as well as a STEM curriculum for teaching 3D design and printing in Primary and Secondary schools. This training and its accompanying resources are designed to support educators interested in creating innovative learning programs, in engaging with our new generation and being part of the 3D community. We will present a few programs and ideas can be accomplished in a classroom setting, as an extracurricular or after school program, as part of a summer camp, at a library, or in a wide variety of other settings. The options are endless!

Maged has 15+ years of experience in start-up creation and development within the learning and technology industry. He has experience in Talent Management Solutions, Competencies Frameworks, Higher Education, K12, e-Learning Solutions (LMS, SMS, VCR), L&D Strategies, Business Simulation and Serious Games. Recently, he moved to Melbourne to start his PhD in STEM education at RMIT.

47. Design Led Innovation with a 6D Solution by Angela Colliver

Suitable for All

Primary and Secondary

In this session, participants will use the Solution Fluency Framework (Global Digital Citizenship Foundation) to develop skills and confidence to embed STEM opportunities within their Design and Technologies teaching and learning program. Participants will be introduced to Solution Fluency that utilises the 6D Model (Define, Discover, Dream, Deliver and Debrief) to support a problem solving approach to STEM and D&T activities. Using activities and resources that scaffold this model and promote design thinking, participants will complete a D&T challenge as an example of how this flexible routine can be. Teaching resources used during the workshop will be available and can be easily modified for use across F-10 year levels.

Angela works as an education consultant and has written STEM resources for National Science Week. She is widely experienced in the development and delivery of nationally distributed education programs and curriculum materials with a Design & Technologies focus. She is recognised internationally as a leader in the education industry and is widely published. Angela is involved in a number of professional associations including the Australian Association for Environmental Education (AAEE) and the SA and QLD Agriculture Teacher Associations.

CONFERENCE INFORMATION

THE PROGRAM

REGISTER AT <http://dattaaustralia.com/2018conference/registrations>

This conference will engage with a wide range of educators, from Primary right through to Tertiary. The program is divided into 2 streams – **RC** (Research Conference) for Tertiary Educators and **School** for Primary and Secondary teachers, with everyone coming together to participate in our conference keynote presentations and to explore our trade exhibition.

Participants are welcome to attend any sessions they choose across the school and research streams. Please note that in order to attend school stream workshops, you must register online through DATTA Aus as numbers are limited due to the hands-on nature of these workshops. Should you have registered already with DATTA RC and wish to attend school workshops, please contact Laura at pl@datta.vic.edu.au.

COSTS

		STANDARD PRICES			
		SCHOOL STREAM		RESEARCH STREAM	
		Student	General	Student	General
ONE DAY	Thursday		\$200		\$400
	Friday		\$300		\$400
	Saturday		\$300		\$400
TWO DAYS	Thursday and Friday OR Thursday and Saturday		\$450		
	Friday and Saturday		\$500		
THREE DAYS	Thursday, Friday, Saturday	\$295	\$695	\$295	\$650

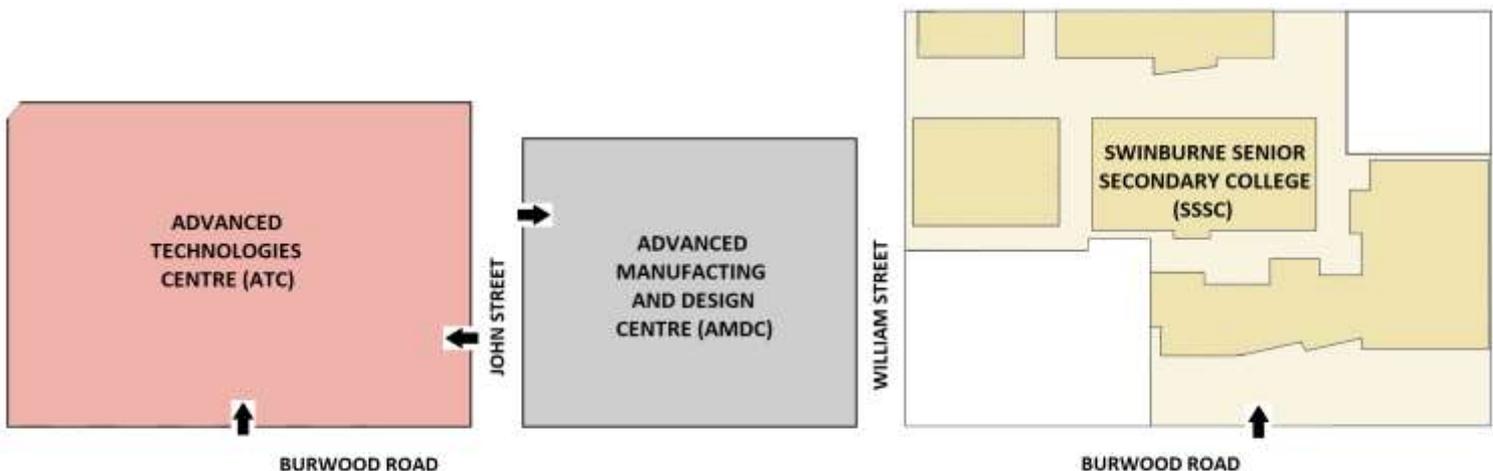
LOCATION

The conference will be held over three locations:

Trade Exhibition, Professional Practice Talks and Refreshments – The Advanced Technologies Centre (ATC) at Swinburne University, located at 401-451 Burwood Road Hawthorn.

Keynote Presentations and Research Stream Presentations - The Advanced Manufacturing & Design Centre (AMDC) at Swinburne University, located at 469-477 Burwood Rd Hawthorn.

School Stream Presentations – Swinburne Senior Secondary College, located at 505 Burwood Road Hawthorn.



CONFERENCE INFORMATION

LOCAL PARKING

Swinburne University has very limited day parking available on-site. Parking is available at the multi-level car park on Wakefield St. Street parking is also available, but please note that Council parking officers are vigilant so take care to note parking restrictions. Given the limited parking available, it is highly recommended that delegates take public transport to the conference.

PUBLIC TRANSPORT

Glenferrie Station is located a very short distance from Swinburne University (see map below), and can be accessed via the Lilydale, Belgrave and Alamein train lines. The University can also be accessed

ACCOMMODATION

The following hotels are offering generous discounts for conference delegates:

Within 15 minutes' walk from the conference venue

Camberwell Serviced Apartments
The Glenferrie Hotel
Quest Hawthorn

In Melbourne CBD

Mercure Therry Street
Punthill

For further information on special deals and contacts, visit <http://dattaaustralia.com/2018conference/info>

CANCELLATIONS

By submitting this form, you agree to DATTA's terms and conditions. DATTA Cancellations and Refund Policy - DATTA will refund the full fee less an administration cost if you cancel before 21 November. If you cancel prior to 30 November, you will be charged 20% of the registration cost. After this day, 50% of the fee will be charged. If you register but do not attend without cancelling prior to the event you will be charged the full fee unless a medical certificate is provided. (DATTA Vic - ABN 97 315 356 383).

DISCLAIMER

DATTA AUS, DATTA Vic and Swinburne University of Technology will not accept liability for damage or loss of any nature sustained by participants, suppliers, agents, contractors, consultants or their accompanying persons, to their personal property as a result of the *Design Led Innovation* conference.

This program is correct at the time of printing and subject to change without notice. Please accept our apologies for any inconvenience that may be caused due to program changes. Notice of cancelled sessions will be circulated to registered delegates as soon as practical.

ENQUIRIES

For enquiries about the school stream of this conference, contact Laura at pl@datta.vic.edu.au.

For enquiries about the research stream of this conference, contact Kurt at kseemann@swin.edu.au.