

Macquarie ICT Innovations Centre

ANNUAL REPORT

2014-15

July 2014 - June 2015



MacICT

Macquarie ICT Innovations Centre



Education
Public Schools



MACQUARIE
University
SYDNEY, AUSTRALIA

Prepared by Cathie Howe
& Lyrian McGregor



Our Vision

Exploring and realising
the potential of emerging
information and communication
technologies to transform
learning and teaching
within a dynamic research
community.

OUTLINE

Located in NSW, Macquarie ICT Innovations Centre (MacICT) is a collaboration between the NSW Department of Education and Macquarie University. The Centre provides statewide professional learning services to both government and non-government schools and communities whilst pursuing an innovative research agenda.

MacICT's services support the meaningful and innovative integration of information and communication technologies in teaching and learning to support syllabus implementation and pedagogy. The team develops comprehensive professional learning courses delivered in a blended approach. MacICT is also able to connect and collaborate with educational institutions and industry partners to inform the education community and provide significant research insights into the capacity of new technologies to enhance teaching and learning and the way school context shapes the use of technology.

At MacICT we believe that learning how to use technology is not enough; the heart of 21st century learning is about becoming a proficient and independent lifelong learner. Our activities promote this through an inquiry-based approach to learning where students are encouraged to collaborate and be creative in solving design challenges.

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HISTORY



2001

Macquarie ICT Innovations Centre grew out of a commitment to form a strategic partnership between Macquarie University and the Department of Education and Training to enhance public education. The partnership aimed to promote innovation in the enhancement of teaching and learning through the use of ICT, positioning both organisations as dynamic leaders in improving student learning outcomes and professional development of staff. A white paper was commissioned, advisory committee established, dedicated building and key resources identified and two Directors appointed.

2002 - 2005

The first Memorandum of Understanding lasting four years was signed on 22nd November, 2002 by Honourable John Watkins, MP Minister for Education and Emeritus Professor Di Yerbury Vice Chancellor Macquarie University. The Centre was managed by two Directors (SE02), and included a staff consisting of a administration assistant (Clerk 1/2) and the equivalent of 3.5 deployed teachers. The Centre's mission was to 'develop, implement and evaluate innovative ways of enhancing learning through the application of dynamic and emerging information and communication technologies.'

Between 2003 to 2005, over 21,000 students attended the Centre, and 1160 teachers accessed the Centre programs with their classes. During 2005, 869 teachers accessed the Centre's professional learning programs such as Teachers e-academy, whole school professional learning days and one day workshops.

2006 - 2011

On the 12th September 2006, Andrew Cappie-Wood Director-General of Education and Training Managing Director of TAFE NSW formalised a continuation of the collaborative initiative with Professor John Loxton Deputy Vice Chancellor (Academic) Macquarie University until September 2009. During this time, MacICT focussed on achieving best practice through leadership in 'teaching and learning using ICT', 'professional preparation of professional learning', 'supporting teachers in curriculum development' and 'delivery and research to enhance teaching, student learning and innovation with ICT'.

In 2006, MacICT's Reference group was formed and throughout this time period, a number of relationships were developed with industry and government agencies such as the Australian Centre for Astrobiology. One day workshops covering a variety of areas such as video texts, robotics, stop animation, social networking, wikis in the classroom and more were conducted.

From 2008, MacICT's professional learning services took a new direction, focusing on a more project-based approach where teachers and their students participated in long term projects. These included: Interactive classrooms, eMints, games-based learning, virtual worlds, connected classrooms, robotics, students as game designers, visual literacy and numeracy, students as learning designers, technology leaders and more.

MacICT organised and held the first week long video conference festival, 'Thinking Globally, Delivering Locally' featuring a wide variety of presenters. Several showcases were held including a student led, 'Students as Designers' showcase featuring student designed digital games and learning sequences. Bajo and Hex from ABC's Good Game presented, played student's video games and chatted to students. Sam Doust, the Creative Director Strategic Development at ABC Innovation also presented on alternative reality dramas and games. Case studies and academic research were conducted in areas including: the use of mobile devices to support students



as they frame their own scientific inquiries into their local environment, virtual worlds in education, students as game designers and robotics in education. Several papers were published from this research (www.macict.edu.au/research/centre-papers).

During 2010, one Director (PEO2) of MacICT was appointed. Throughout 2010-2011 MacICT ran some groundbreaking projects gaining global attention. Two of the project leaders received awards for their work. Projects included Virtual Worlds: When2050, Game2Design, Robotics, LAMs in Teaching and Learning, Local Ecostudy Project, Operation Innovate and Professional Learning. During 2011, MacICT held a number of special events featuring renowned academics. These included, 'Playing with Learning Spaces': Professor Stephen Heppell, 'MacICT Robotics Day': Dr Eric Wang, 'Nanotechnology and Diamond': Prof James Rabeau, Physics Video Conference with Sir Anthony James Leggett (Nobel Prize in Physics), 3DEDRATS: a month long celebration of innovation and creativity in Australian contemporary education (www.3dedrats.wordpress.com). It was during this time that the state handed responsibility and funding of MacICT to the DEC Northern Sydney Region.

2012

A restructuring in the Department of Education and Communities led to changes within MacICT. This resulted in a significant reduction in staff and operating budget, and a move to a partially self-funded model. A new Manager (SEO2) and an Office Administrator was appointed. New branding and a new website was developed and launched during 2012. MacICT was recognised by NSWDEC as a state-wide resource with teachers across NSW from both government and non-government schools accessing its services. MacICT forged new collaborations with organisations including LEGO® Education, FIRST Australia, Alternator and buildAR. The opportunity to work with experts honed the development of workshops and

provided opportunities for teachers to work with globally recognised experts. During 2012 alone, 2538 students, 229 unique teachers and 141 unique schools accessed MacICT's services. MacICT conducted two innovative case studies, *iPads in the Year 1 Classroom: Working Mathematically* and *Augmenting Reality: Students as e-Design Artists*.

2013

During 2013, MacICT's team doubled from five in 2012 to a team of 10 in 2013. In addition to the Centre Manager and Office Manager, the team was made up of casual teachers, retired teachers, doctoral and undergraduate students. MacICT maintained its strong collaboration with LEGO® Education and forged a new collaboration with BRIDGES to Higher Education. We were also involved in Macquarie University's PACE program. In a joint effort, MacICT and Macquarie University were awarded our first CS4HS Google grant which led to the development of a two day course titled *Bringing Computing to Life: raising the bar in teaching computing*. During 2013, 509 unique teachers from 301 schools attended professional learning courses. MacICT conducted 93 boot camps attended by 3190 students from 54 schools. MacICT's reach increased dramatically with teachers and educators from across NSW attending events and courses. MacICT received a \$200,000 grant from NSWDEC to run an academic research project titled, *Researching Connected Communities 21* involving over 100 teachers from 17 schools. In addition to this research project, MacICT began work on a second research project *Transmedia Storytelling: Weaving a Storyworld Web*.

THE TEAM



Cathie Howe [Centre Manager]

Cathie is a Professional Learning & Leadership Coordinator for the NSW Department of Education and manager of MacICT. As well as developing and delivering Professional Learning, Cathie is the creative and strategic leader of an expanding, collaborative team responsible for the design and quality of MacICT's services. She oversees all course development and mentors many of the team members to ensure that MacICT continues to provide a consistently high level of service to schools, teachers and students.

Cathie manages, and is involved in the development of MacICT's case studies and academic research projects. She is passionate about inspiring and empowering teachers to transform their practice by understanding what they have to teach (curriculum), how they are going to teach it (pedagogy), integrating digital tools in creative ways to enable meaningful learning to occur.

During her 20+ years both as a teacher and an executive in Primary Schools, Cathie has been recognised for her innovative practice, digital learning design and leadership.



Lyrian McGregor [Office Manager]

Lyrian is a Clerk 1/2 for the NSW Department of Education, providing support to the MacICT Team. She is the first point of call for all inquiries and visitors. She is responsible for bookings, course administration, finance and event management. She assists the team as needed with any course administration, technical assistance, equipment or logistics. Lyrian is also responsible for all MacICT's marketing, social media and web presence. On occasion she will assist on case studies and projects as needed to provide solutions for schools' needs. She has built websites for courses and projects including MacICT's Online Course Portal.

MacICT relies on a passionate team of largely casual teachers with a variety of expertise who develop and facilitate Professional Learning Services for schools, teachers and students.

John Burfoot

[Developer & Facilitator]

A former teacher with the Catholic Education Office, John has been developing MacICT's popular robotics programs since 2011. He has also developed 'maker space' workshops working with electronics and recyclable materials to foster design skills and creativity in education.



Dr Sarah Boyd

[Developer & Facilitator]

Sarah is a software programmer and Electrical Engineer with a PhD in Computer Science from Macquarie University. She has retrained as a Computing & Mathematics teacher and began working with MacICT in 2014, combining her engineering background with a love of teaching.



Daniel Green

[Developer & Facilitator]

Daniel is an artist, educator and broadcaster working as a Secondary Visual Arts teacher. He has taught digital media production, introductory electronics and game design. Recently, Daniel was a Co-ordinator of the Sydney Mini Maker Faire at the Powerhouse Museum. He joined the MacICT team in 2014.



Karolina Novak

[Developer & Facilitator]

Karolina is an artist and educator with professional interests in hands-on and cross-curricular learning. She has a Master of Fine Arts in Printmaking from UNSW and a Master of Teaching from Sydney University. Karolina is currently teaching high school English, Visual Arts and Technology.



Evan Bonser

[Developer & Facilitator]

Evan began his university training in robotics before changing to complete a Bachelor of Education (Primary) from the University of Western Sydney. He has taught in a variety of educational environments - both public and private sectors, Special Needs and Hospital Schools from K-12.



Annika Lyttle

[Facilitator]

With a career spanning chartered accounting, business analysis & planning, and teaching, Annika deeply appreciates the need for students to be both creative & adaptive. She has a Bachelor of Economics from Macquarie University and a Masters of Teaching (Primary) from UNE.



Nerida McCredie

[Researcher & Facilitator]

During her 13 years of classroom teaching at St Ives North Public School, Sydney, Australia, Nerida has been recognised for her work in digital learning and awarded for her innovative classroom practice. Nerida now works as an educational adviser, trainer and keynote presenter.



Michael Stevenson

[Researcher, Developer & Facilitator]

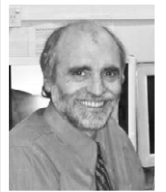
Michael is a doctoral student at Macquarie University. As an educator with nearly a decade of experience in the secondary classroom alongside a growing list of publications, he bridges the gap between research & practice with an ongoing commitment to professional learning.



David Grover

[Facilitator]

David held the position of Head Teacher of Computing at Chatswood High School for many years, is an experienced presenter and lead author of the Pearson/Cengage text for Information and Software Technology. David is presently adjunct Lecturer in the School of Education at Macquarie University.



Kylie Jackson

[Facilitator]

Kylie began working with MacICT as a student workshop facilitator in 2013. She is currently a pre-service teacher studying a Bachelor of Education (Primary) at Macquarie University. She is also Early Childhood trained and holds a Diploma in Children's Services.



Jan Eade

[Developer & Facilitator]

Jan Eade has been involved with MacICT since 2003 when she was deployed to the Centre for a term. On retiring in 2008, having worked in schools as a classroom teacher, STLA and teacher-librarian, Jan re-joined MacICT to investigate iPads in education and to mentor other team members.



Neville Fraser

[Developer & Facilitator]

Runner-up in the 2014 Prime Minister's Award for Primary Science Teaching, Neville has over two decades experience using ICT in education. He has been a director of the NSW Computer Education Group & brings a wealth of knowledge and experience to blending science teaching with ICT.



Wayne Chaffey

[Facilitator]

A science educator for almost four decades, Wayne commenced teaching at James Ruse Agricultural High and retired from Moree Secondary College. He has taught Science in a range of schools and provided professional learning for teachers from K-12, mostly in regional NSW.



Khyiah Angel

[Researcher, Developer & Facilitator]

Khyiah is both a PhD candidate in the Department of Media and a sessional academic in the School of Education at Macquarie University. She has 15 years experience across primary and high school settings. Khyiah also has a Master's degree in Creative Writing.



Vivian Leung

[Facilitator]

Vivian has been studying education and psychology at Macquarie University and working at MacICT since 2014. She has a keen interest in enhancing learning with technology and her role as a casual robotics facilitator has allowed her to share her passion by making technology accessible to students.



PROMOTING INNOVATION

Promoting Ideas and Philosophies on 21st Century Learning

Social Media & Online Communities

MacICT employs a variety of social media platforms to promote activities, engage educators in discussion on innovative practice, share digital resources and support its professional learning services. Online communities are formed as part of its workshops and projects to create professional learning networks, provide resources, support and sharing. A **new** mailing list system was launched in 2015 that will enable MacICT to better manage, track and engage clients with professional standard newsletters and updates.



470

MEMBERS OF MACICT'S
GOOGLE+ COMMUNITIES



1304

TWITTER FOLLOWERS
60% INCREASE SINCE 2013



3170

SLIDESHARE VIEWS 2014-15
12 PRESENTATIONS



LEARNING PLATFORM FOR
TEACHER AND STUDENT
WORKSHOPS
HOUSES RESOURCES,
PROMOTES SHARING &
CONVERSTATIONS



3536

SUBSCRIBERS
TO MACICT'S MAILING LIST



NSW DEC PRIVATE SOCIAL
MEDIA PLATFORM FOR
EMPLOYEES
PROMOTE ACTIVITIES,
PROVIDE SUPPORT TO
TEACHERS, CONVERSATIONS

GREAT TEACHING, INSPIRED LEARNING

Recognise and
share outstanding
practice and initial
teacher education.

STATE NSWDEC PLAN

Goal 15 Improve the
Quality of All Teaching

MACICT PRIORITY

Promote
Innovation



Websites & Blog

The MacICT website provides information about MacICT’s professional learning services, student excursions, academic research projects, case studies, resources and more. The blog contains articles by staff on a variety of subjects related to our services. Other MacICT websites include online course portals, resource websites and project report sites.

www.macict.edu.au



Articles, Reports and Academic Publications



Cathie Howe “Robotics in Education”, **Voyeur (Virgin Australia In Flight Magazine)** for Alex Kidman, August 2014



Merida McCredie, Cathie Howe “Weaving a StoryWorld Web” 2015. Sydney: **Macquarie ICT Innovations Centre**



Stevenson, M., Howe, C., & Hedberg, J. G. (2014). “Researching Connected Communities 21”. Sydney: **Macquarie ICT Innovations Centre**



Sarah Boyd “Getting Girls Into Coding” **Educational Technology Solutions Magazine**, 27 May 2015



Stevenson, M, Hedberg, J.G., O’Sullivan, K & Howe, C. (2014). “Leading Learning in a Digital Age,” **Professional Development in Education** [in press].



Presentations and Contributions to Special Events, Conferences and more

The MacICT team has been recognised for its expertise, deep knowledge and contribution to learning and teaching by both the educational community and industry. Team members have been invited to present, speak and contribute to a variety of special events.

Cathie Howe, **Computer Science Google Outreach Partner Summit**, Supporting Computer Science in Schools, (Special Invitation), November 2014

Cathie Howe, "Innovative Practice at MacICT", **NSW DEC Ed Services Leadership Conference**, October 2014

Cathie Howe, "Teaching in the 21st Century", **Early Careers Teacher Conference**, September 2015

Cathie Howe "Innovation, Technology and Education" for delegation of **educational leaders completing a PhD from Auburn University**, Alabama, USA

Cathie Howe "Innovative Practice", **Teachers in Front Summit: Breaking Through**, August 2014

John Burfoot "Robotics Workshop", **FIRST Robotics Challenge Australian Trials**, March 2015

Cathie Howe, Nerida McCredie "Transmedia Storytelling for Education", **ClassTECH Conference**, March 2015

Cathie Howe, "Creative Integration of Technology into Primary School Science and Mathematics", **Malaysian Delegation of Senior Education Executives** to Macquarie University, November 2014

Michael Stevenson, "Leading Learning in a Digital Age", **ICEM (International Council for Educational Media)**, IGER, September 2014

Daniel Green, Sarah Boyd, "Makers in the Classroom", **ClassTECH Conference**, March 2015

Sarah Boyd "Maker Spaces in Education" Lecture for **Macquarie University's EDUC 362 Unit**, May 2015

John Burfoot "Robotics in Education" Lecture and Tutorials for **Macquarie University's EDUC 362 Unit**, May 2015

Cathie Howe "Digital Games and Learning" Lecture for **Macquarie University's EDUC 362 Unit**, April 2015

Daniel Green "Intro to Game Design with Kodu" Tutorials for **Macquarie University's EDUC 362 Unit**, April 2015



Cathie Howe, VIVID Ideas: Breakfast Roundtable on STEM, Innovation and Creativity in the Classroom, for key leaders from government, education and private sections. (Special Invitation), **VIVID Sydney Festival**, May 2015

Cathie Howe, Panel Member, VIVID Ideas: Creating and Innovating with Technology in the Classroom Panel Session, **VIVID Sydney Festival**, May 2015

Daniel Green, Sarah Boyd, "Fun Programming with the Intel Galileo", **VIVID Sydney Festival**, May 2015

GREAT TEACHING, INSPIRED LEARNING

Recognise and share outstanding practice and initial teacher education.

STATE NSWDEC PLAN

Goal 15 Improve the Quality of All Teaching

MACICT PRIORITY

Promote Innovation

MacICT
Macquarie ICT Innovations Centre

Weaving a StoryWorld Web Transmedia in Education
a MacICT Research Project

Project Leader: Cathie Howe
Research Advisor: Dr Nerida McCredie

CLICK TO SEE PRESENTATION ON SLIDESHARE



CATHIE HOWE AND NERIDA MCCREDIE PRESENTING PROJECT FINDINGS AT CLASSTECH CONFERENCE



Daniel Green @iamdanielgreen · Mar 11
 Thanks to everyone who participated in the @macict roundtable. Inspiring to see so many get involved! #FutureSchools

Khyiah Angel @KhyiahAngel · Jun 9
 Great article in Education Technology about girls and coding by one of @macict's own educationtechnologysolutions.com.au/2015/05/22/get... Well worth a read!

Getting Girls Into Coding
 Sarah Boyd. Women are missing from the technology landscape in Australia. According to a 2013 Australian workforce study, they occupy less than 20 percent of ...
educationtechnologysolutions.com.au

← ↻ □ ☆ ...



Partnerships & Collaborations Enhance our Services

MacICT pursues collaborations with other educational institutions and industry where there are common synergies that support and inform the educational community. These collaborations deepen the expertise of MacICT’s team while furthering its scope and reach.

LEGO® Education Australia

With the direct support of Sandra Googan (Senior Regional Manager) LEGO® Education Australia is continuing to provide both financial support and expert advice for MacICT’s robotics programs. Examples include:

1. covering the cost of experts for workshop development and professional learning events
2. providing robotics equipment and resources
3. providing \$12,000 to sponsor the development and running costs of workshops and conference presentations
4. providing an advertising space in LEGO® Education’s 2015 national catalogue.

Australian Nuclear Science & Technology Organisation (ANSTO)

In 2015, MacICT was approached by ANSTO to run workshops during the school holidays to encourage students to become involved with engineering. MacICT facilitators have run holiday student workshops on robotics, game design and coding with Scratch. These have been sold-out events with fantastic feedback from all involved.

ANSTO have subsequently tapped into MacICT expertise and have funded a project where MacICT will design and build a robotics LEGO® prototype of their neutron scattering instrument (Taipan model) for ANSTO to replicate and host in its Discovery Centre. MacICT will also provide build instructions and design some simple activities using the model that can be carried out by student visitors to the Centre.

Microsoft Australia

Think 3

MacICT has been approached by Microsoft Australia to partner with them in providing support to teachers in Office 365. Microsoft have offered to provide training to MacICT’s team and to promote any of our services to schools that integrate Office 365.

MacICT developed a partnership with Think 3 to run workshops for teachers on a range of entry level topics such as iPads A-Z and using Apple Configurator to manage iPads. These workshops provided teachers with lesson ideas and different ways of using the apps.

GREAT TEACHING, INSPIRED LEARNING

Recognise and share outstanding practice

RURAL AND REMOTE

Great teachers and school leaders; curriculum access for all

MACICT PRIORITY

Promote Innovation



FACILITATOR JOHN BURFOOT AND TEACHER PARTICIPANTS OF THE LEAP ROBOTICS PROGRAM

Bridges to Higher Education & LEAP at Macquarie University

The Bridges to Higher Education initiative, funded by the Commonwealth Government's Higher Education Participation and Partnerships Program (HEPPP), works towards promoting continuing education in schools with low socio-economic status. MacICT has been collaborating with Bridges since 2013 to provide support, training and project development for their Bridges Connect Robotics project. In addition to running workshops at Macquarie University, MacICT facilitators have travelled to Young and Kyogle to deliver professional learning workshops for teachers. Hands-on student boot camps have been delivered via Video Conference facilities and Adobe Connect to several regional schools.

The robotics project, in collaboration with MacICT, officially ended in 2014, but due to its great success, Macquarie University decided to incorporate it into its LEAP Program (Learning, Education, Aspiration, Participation). MacICT is continuing to support this program in 2015.



"It's given [students] the opportunity to explore possibilities outside their world to work with technology and 21st Century capacity building. It's given teachers a chance to explore new opportunities in their professional learning."

Janeen Silcock
[Principal, Kyogle High School]

"It was an amazing experience for our students. All the students were focused and enthusiastic. Must thank John for a great session."

Boopinder Masawa
[Teacher, Kyogle High School]



READ TEAM MEMBER JOHN BURFOOT'S BLOG POST ABOUT HIS INVOLVEMENT WITH THIS PROJECT

[CLICK HERE](#)



Google Australia



READ MACICT'S BLOG
POST ABOUT THE MAKER
MOVEMENT AT MACICT

[CLICK HERE](#)



In 2014 MacICT was successful in an application for a 'Computer Science for High School' (CS4HS) grant covering primary as well as high schools. This annual program promotes computer science education by helping to equip educators with the skills and resources they need to teach computer science and computational thinking concepts in fun and relevant ways. Globally, this program has already trained more than 12,000 teachers and reached over 600,000 students.



MacICT's successful application, resulting in a \$14,000 Google grant, allowed us to develop a series of professional learning workshops for primary school and high school teachers titled, *MakerDay C.R.E.A.T.E! How to create reality with electronics, art and technology in education*. These workshops, inspired by the Maker movement, aimed to promote STEAM (science, technology, engineering, arts and science) skills. These workshops were very successful and after a couple more iterations, MacICT is now offering professional learning courses titled, *Learning through Makerspaces* to both Primary and High School teachers.

In 2015 Dr Matt Bower from Macquarie University and MacICT submitted a joint CS4HS application for a professional learning and research project. The submission was to fund the development of a professional learning course to assist K - 8 teachers develop their computational thinking pedagogies. The submission drew on contemporary innovative practices from around the world as well as prevailing literature in the computer science education field, to progress the capabilities of teachers to teach the upcoming Australian Digital Technologies Curriculum. Research was to be conducted into the difficulties that teachers experience when learning computational thinking concepts and pedagogies. We were successful in receiving a Google grant to fund the development of the professional learning only. Some data will be gathered from the project and used for research purposes. Project development will begin in Term 3, 2015.

GREAT TEACHING, INSPIRED LEARNING

Recognise and share
outstanding practice

RURAL AND REMOTE

Great teachers and
school leaders;
curriculum
access for all

MACICT PRIORITY

Promote
Innovation



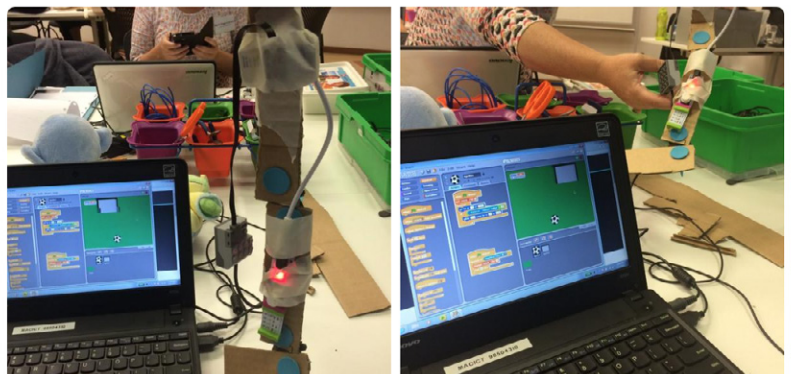
"The MakerDay was THE best PL I've had all year.
TOTALLY fuelled my passion for Making!"

Zeina Chalich
[Teacher, St Finbar's High School]



MacICT @macict · Nov 5

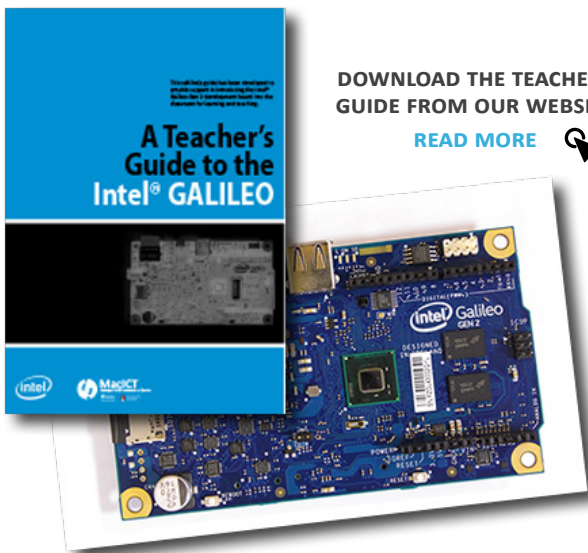
Nice work! "@Laws6: Scoring goals in Scratch using motion sensors and the leg that I created. #makerday @macict"



Intel Australia

In 2014, as a result of meeting MacICT's manager and STEAM team members, and seeing some of the work the team were conducting with Makerspaces, Intel Australia sought out MacICT's expertise to develop a Teacher's Guide for their new Intel® Galileo Gen 2 development board, develop an engineering kit and run professional learning workshops. The project aimed to introduce teachers to programming with physical computing and support the development of STEM skills. Intel funded the \$40,000 project with MacICT successfully developing a Teacher's Guide in late 2014. The Guide will be distributed to teachers Australia wide, as well as being internationally available.

The partnership with Intel has been very successful and has led to other opportunities for staff to present at conferences, teach inter-state and provide on-site professional learning services to schools.



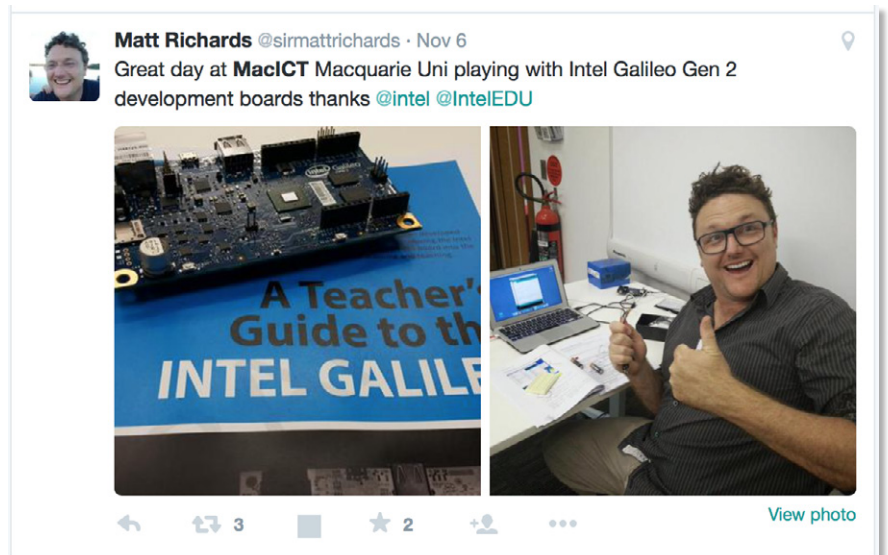
DOWNLOAD THE TEACHERS
GUIDE FROM OUR WEBSITE

[READ MORE](#)



"We've been extremely pleased with MacICT's work in this space and certainly want to continue a long-term relationship with MacICT. Cathie and her staff have been enormously helpful and we have valued their input and all the work they have done."

Katie Ford
[Project Manager, Intel Australia]



GREAT TEACHING, INSPIRED LEARNING

Develop and maintain professional practice; Recognise and share outstanding practice and; initial teacher education

AUSTRALIAN CURRICULUM

RURAL AND REMOTE

Great teachers and school leaders; curriculum access for all

NSW QUALITY TEACHING MODEL

CONNECTED COMMUNITIES STRATEGY

Providing professional development opportunities, Increasing engagement of all children

HORIZON REPORT 2014 K-12 EDITION

1. Key trends
Accelerating Educational Technology Adoption in Schools
- Rethinking roles of teachers and how schools work
- Innovative pedagogical practices
- Shift to deeper learning approaches
- Hybrid learning designs

2. Important developments in technology in schools
- BYOD
- Cloud computing
- Games and gamification
- Wearable technology

MACICT PRIORITY

Enhance Teaching & Learning

ENHANCING TEACHING AND LEARNING

Professional Learning Services

MacICT's professional learning services are informed by research that is carried out by the Centre or by other key reports and organisations. It is always fresh, evidence-based and aimed at producing more effective practice for both individuals and schools, leading to improved student learning. Our activities also fuel further research avenues.

The Horizon Report produced by the New Media Consortium each year examines emerging technologies for their potential impact on and use in teaching, learning, and creative inquiry in schools. It also examines key trends that accelerate technology adoption and challenges impeding technology adoption in K-12 education. *The Future Works Skills 2020 (2011)* report identifies 10 essential work skills we will need to be productive contributors in the future. Among these skills is a *design mindset*. MacICT has long been an advocate of learning through design, both as teachers and students.

At MacICT we believe that learning how to use technology is not enough; the heart of 21st century learning is about becoming a proficient and independent lifelong learner.

The Australian Government Chief Scientist Report in September 2014 titled, *Science, Technology, Engineering and Mathematics: Australia's Future* and the June 2015 CEDA (Centre for Economic Development of Australia) report titled, *Australia's Future Workforce* are two reports that help drive MacICT's STEAM (science, technology, engineering, arts and mathematics) professional learning focus. Both report advocate a STEM education for all is critical for Australia's economic future and a need to provide STEM professional learning to teachers leading to inspirational teaching and inspired learning.

All courses developed are supporting the implementation of the BOSTES NSW K-10 syllabuses. MacICT also endeavours to support some of NSWDEC's the key reforms to improve the quality of teaching in schools and outcomes for all students as well as the Public Schools NSW Strategic Directions - *Creating Futures Together 2015*.

Participation - A Brief Summary

In 2014-15 MacICT ran workshops, courses, special events and other school services.



1463
UNIQUE PARTICIPANTS



642
UNIQUE SCHOOLS



91
EVENTS



MacICT provides many BOSTES Quality Teacher Council registered courses. Courses may run a few times before registration is sought, to make sure any necessary adjustments are implemented.



“I enjoyed the course and it wasn’t one of those professional developments that you leave thinking, ‘I’ve heard that all before.’ What a relief and breath of fresh air. A course that inspires a teacher to look more deeply into what was learnt on the day and inspires you to take a different perspective in your teaching and learning.”

Leigh
[Participant, Coding in the Classroom]

GREAT TEACHING, INSPIRED LEARNING

Develop and maintain professional practice; Recognise and share outstanding practice and; initial teacher education

AUSTRALIAN CURRICULUM

RURAL AND REMOTE

Great teachers and school leaders; curriculum access for all

NSW QUALITY TEACHING MODEL

CONNECTED COMMUNITIES STRATEGY

Providing professional development opportunities, Increasing engagement of all children

HORIZON REPORT 2014 K-12 EDITION

1. Key trends
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- Rethinking roles of teachers and how schools work
- Innovative pedagogical practices
- Shift to deeper learning approaches
- Hybrid learning designs

2. Important developments in technology in schools

- BYOD
- Cloud computing
- Games and gamification
- Wearable technology

MACICT PRIORITY

Enhance Teaching & Learning

Teacher Workshops

These workshops (usually one day only) are designed to be hands-on and collaborative. No prior learning is assumed for most workshops.

Bringing Computing to Life: Raising the Bar in Teaching Computing

Provides a range of exciting strategies and resources for NSW's four dedicated computing courses (IST, IPT, SDD and IT(MM)) that teachers can use directly in their classrooms to create inspiring computing experiences for their students.

12HRS - 2 DAYS

QTC REGISTERED

CREATIVITY

HIGH SCHOOL

S.T.E.A.M

IST, IPT, SDD, IT(MM)

MAKER ED

DESIGN



"I am not a creative person and I am the only IT teacher at my school. This was the perfect PD for me, it's exactly the pedagogical practices and learning activities that I need to bring to my classroom. I feel inspired and informed."

[Participant, Bringing Computing to Life]

Robotics in the Classroom

With Bee-Bots, Pro-Bot, LEGO® WeDo and LEGO® Mindstorms EV3

Robotics provides a highly engaging medium for creativity, critical thinking, collaboration and communication – four essential skills for learning and ICT within a curriculum context. This workshop promotes independent learning through an inquiry-based approach where participants are encouraged to collaborate and be creative in solving open ended challenges.

5HRS

QTC REGISTERED

CREATIVE & CRITICAL THINKING

ENGINEERING DESIGN

SCIENCE & MATHS K-10

PROGRAMMING

S.T.E.A.M



"The method of delivery modelled discovery, problem solving techniques and associated skill development in these areas which was very useful for thinking about classroom delivery"

[Participant, Robotics in the Classroom]

Augmented Reality: A New Dimension in Learning

Augmented Reality has the potential to provide learning opportunities that are both individual and personal, learning experiences that aren't offered (or are readily available) in reality and challenging and authentic design based learning tasks.

5HRS

QTC REGISTERED

CREATIVE & CRITICAL THINKING

DESIGN BASED LEARNING

DIGITAL LITERACY

Introduction to the 'FIRST' LEGO® League Robotics Program

In partnership with LEGO® Education Australia, this workshop unpacks the FIRST LEGO® League Program, a global phenomenon inspiring students to pursue engineering and careers in science. Teachers will be shown how the program addresses key learning areas and how teachers can integrate FLL within the classroom.

5HRS

CREATIVE & CRITICAL THINKING

ENGINEERING DESIGN

SCIENCE & MATHS K-10

PROGRAMMING

PBL

3D Printing and Designing for the Classroom NEW

An introductory workshop for primary and secondary teachers across all KLA's wishing to introduce 3D design and printing into their classrooms and coursework.

5HRS

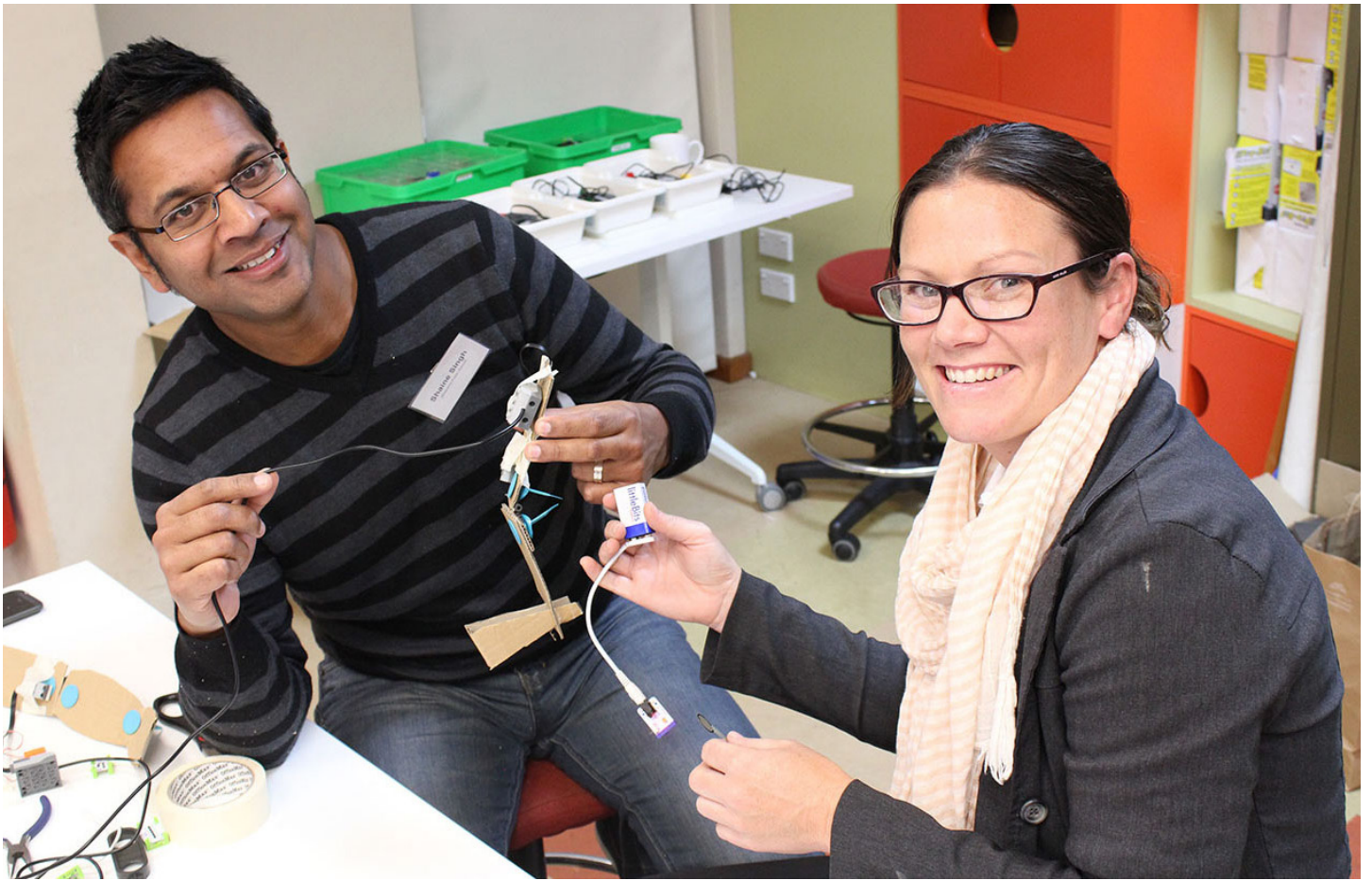
CREATIVITY

3D DESIGN

MAKER ED

S.T.E.A.M

CROSS CURRICULAR



Sally-Anne Robertson @eduemum · Oct 13

@macict This was fab. fun - anyone interested in Maker Spaces or tinkering in general should go. Great way to integrate STEM in other KLAS.

← ↻ 1 ★ 1 + 👤 ⋮

[View conversation](#)

GREAT TEACHING, INSPIRED LEARNING

Develop and maintain professional practice; Recognise and share outstanding practice and; initial teacher education

AUSTRALIAN CURRICULUM

RURAL AND REMOTE

Great teachers and school leaders; curriculum access for all

NSW QUALITY TEACHING MODEL

CONNECTED COMMUNITIES STRATEGY

Providing professional development opportunities, Increasing engagement of all children

HORIZON REPORT 2014 K-12 EDITION

1. Key trends
Accelerating Educational Technology Adoption in Schools

- Rethinking roles of teachers and how schools work
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- Wearable technology

MACICT PRIORITY

Enhance Teaching & Learning

MakerDay C.R.E.A.T.E: Educational Systems That Facilitate Design And Foster Creativity NEW

Also known as 'Learning Through Maker Spaces'

Initially three workshops were developed and funded by Google - a K-2 workshop, a 3-6 workshop and a 7-12 workshop. These workshops were first inspired by the growing popularity of D.I.Y. building and tinkering projects commonly known as the 'Maker Movement'. The workshops look at how teachers can engage their students with programming, electronics, engineering and design by bringing static objects to life using digital technology.

5.5HRS CREATIVE & CRITICAL THINKING DESIGN CODING RECYCLED MATERIALS ELECTRONICS S.T.E.A.M. MAKER ED

Good Game Design: Transforming Students From Consumers To Designers And Creators Of Digital Content

Game design provides a context for inquiry and discovery, leading students to become active problem solvers, to engage in their own learning and develop 21st century fluencies.

5HRS QTC REGISTERED CREATIVE & CRITICAL THINKING DESIGN PROGRAMMING LITERACY MATHEMATICS



"[It was] great because it was practical and plenty of time to play with Kodu. Also the Google Docs activity was really useful and a good example of practicing what you're preaching - collaboration."

[Participant, Good Game Design]

"This really stretched me, which was a good thing. I loved the research framework that was presented prior to the practical application, and then the opportunity to explore, tinker and create."

[Participant, Good Game Design]

Introduction to the Intel Galileo NEW

In partnership with Intel Australia, MacICT has run workshops that provided participants with an opportunity to learn about the Intel Galileo development board and participate in a range of activities that demonstrated the ability to integrate the Galileo into learning and teaching.

5HRS CREATIVE & CRITICAL THINKING DESIGN PROGRAMMING PHYSICAL COMPUTING ELECTRONICS S.T.E.A.M. CROSS CURRICULAR

Game Development with Unity 3D NEW

Unity is a powerful, easy to learn 3D modelling and game engine that is very flexible and well supported. This workshop takes high school teachers to the next level in engaging their students in working in a 3D environment, programming with real code and designing gaming experiences.

5.5HRS CREATIVE & CRITICAL THINKING DESIGN PROGRAMMING TAS MATHEMATICS S.T.E.A.M.



"All aspects were of a very high quality. Peter is an expert in his subject area [and] should look to facilitate more of this particular work with teachers. Particularly with the advent of the Technologies component of the Australian Curriculum."

[Participant, Game Development with Unity]



Joanne Pintley @Joanne_P · Mar 8

Love seeing so many teachers interested in expanding the use of technology in the classroom and for themselves. I'm inspired. #macict

← ↻ 1 ★ 2 + 👤 ⋮

Teacher Courses

These professional learning courses involve a follow-on component completed by the participant in their school context with the aim of transferring the new practice to their teaching and learning repertoire. Some participants go on to help others adopt the new practice. This component of the course usually involves deliverables such as designing lesson sequences or unit plans, creating a digital product or content, contributing to an online community and a reflective activity. These deliverables are included as part of the course hours and are designed to engage teachers in real learning through doing leading to improvement in the skills and capabilities of teachers. Extensive digital resources and content are curated by facilitators and shared through MaICT's various online communities. The online communities are connected learning communities designed to connect people, learning experiences and the curriculum.

Creative Video Production With iPads: Using Digital Media Technologies To Enhance Learning And Teaching NEW

In this course, teachers will uncover the learning potential of digital video production through collaborative and online exploration of a wide variety of iPad apps and online resources. Participants will collaborate on the creation of a film using the Design Thinking process.

10HRS

QTC REGISTERED

CREATIVE & CRITICAL THINKING

DESIGN

DIGITAL LITERACY

CROSS CURRICULAR



"I really liked how the content was taught, then we were given the opportunity to explore the apps before we were able to create amazing video production. I found completing a lesson plan and example a great idea. I love professional learning I can actually apply in the classroom."

Fabienne
[Participant, Creative Video Production]

"Thank you again for your help, I have honestly found this to be the most enjoyable and useful TPL course I've ever had!"

Trudie
[Participant, Creative Video Production]

"[Since this course] I have worked with other teachers at my school to implement this technology in their classroom and have team taught with them. I have created an iBook to share with teachers who are interested in using green screen technology in their classroom and have designed and successfully implemented a GATS unit of work which involved working with members of the public. I am about to attend a conference in Singapore as an Apple Distinguished Educator and cannot wait to share what I learnt at MaICT with others."

Jason
[Participant, Creative Video Production]

Writing Revolution: Creating Innovative Integrated Multimodal Texts For Stage 3 And 4 Teachers NEW

Literacy is changing. Technology has become an intermediary to everything we do. Reading and writing are no longer isolated or passive affairs in our socially networked global learning community. Students are now finishing school in Year 12 using reading technologies that weren't invented when they began Kindergarten. During this hands-on workshop, participants will design and create an integrated multimodal text utilising aspects of all text types.

10HRS

ENGLISH

MULTIMODAL

CREATIVITY

DESIGN

DIGITAL LITERACY

CROSS CURRICULAR

Bringing Science to Life: Integrating ICT into the Science and Technology K-6 NSW Syllabus for the Australian Curriculum NEW

The new NSW K-10 Science Syllabus mandates the integration of ICT to support a range of teaching, learning and assessment approaches. This provides great scope for the integration of new and emerging technologies in the design of immersive, authentic learning. This course helps teachers gain confidence and ability to integrate ICT meaningfully into learning and teaching to support the aims and objectives of the new Science K-6 syllabus.

10HRS

QTC REGISTERED

DIGITAL LITERACY

S.T.E.A.M.

NEW SYLLABUS IMPLEMENTATION

GREAT TEACHING, INSPIRED LEARNING

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MACICT PRIORITY

Enhance Teaching & Learning

21st Century Curriculum Design with iPads: Mathematics / English NEW

Exploring and evaluating the pedagogy behind the use of iPads in the classroom, sampling apps and discussing ways in which the technology could be integrated into the Mathematics curriculum and the English curriculum (run as two separate courses).

13HRS

QTC REGISTERED

NEW SYLLABUS IMPLEMENTATION

DIGITAL LITERACY

MOBILE TECHNOLOGY

Bringing Mathematics to Life: Integrating ICT into the Mathematics K-6 NSW Syllabus for the Australian Curriculum NEW

The increasing variety and sophistication of software and apps available today allow primary teachers to really enhance and extend learning in Mathematics from remembering and understanding to creating and evaluating. In this workshop we will show teachers how to use technology in innovative ways to more deeply engage students and meet the learning outcomes from the K - 10 syllabus within an BYOD environment.

10HRS

NEW SYLLABUS IMPLEMENTATION

CREATIVE & CRITICAL THINKING

INFOGRAPHICS

DIGITAL LITERACY

S.T.E.A.M.

DESIGN



Ena Lakisoe @Wildraindreamer · Jun 18

Loving learning with @SadafAmiri2 @CheahMilly at @macict and @sarahboydster amazing resources and Bringing Mathematics to life.



3



Capturing Stories Through Play: Composing multimodal texts using LEGO® Education Story Starter, iPads and more for K-2 teachers NEW

Play has long been acknowledged as an important part of learning. Through play, children engage with and explore the world around them in much the same way that we encourage them to learn. Researchers and educational theorists have long stressed the importance of harnessing the spirit of curiosity, experimentation and creative expression inherent in play to support and enhance children's learning. This hands-on workshop is centred on capturing stories naturally told through play, and translating these stories into multimodal texts.

10HRS

QTC REGISTERED

CREATIVITY

NEW SYLLABUS IMPLEMENTATION

DIGITAL LITERACY

MULTIMODAL



"The learning experience was very valuable and I liked how we were given the opportunity to use concrete materials and had the freedom to use these materials however we wanted. We did a lot of hands on activities and Karolina presented information to us in many different ways which we can also use in the classroom with our own students."

[Participant, Capturing Stories Through Play]

"[I most enjoyed] being exposed to the research that reinforces the importance of play provides the strong pedagogical base to guide classroom practice, and so provided a key component of the day for me. The hands on component was very important too, because you can see how it might look in your own classroom, when otherwise you may not have the time to do this exploration."

[Participant, Capturing Stories Through Play]

"I took a lot away from this course. The most valuable skill I found that I learnt on this course was how to use green screen technology. By implementing what I have learnt on this course in the classroom, my students have become further motivated and are developing deeper understandings of the knowledge they are interacting with. I have found green screen technology to be a tool that can be coupled with learning paradigms such as challenged based learning. Furthermore, the technology also allows students to create exciting and relevant multimodal texts that meet many outcomes within the new English syllabus."

[Participant, Capturing Stories Through Play]

Coding in the Classroom: Using Digital Media Technologies To Enhance Learning And Teaching For K-6 NEW

Coding is becoming an increasingly important skill for 21st century learners. By learning to code, students are also learning mathematical and computational thinking, strategies for problem solving, systematic reasoning, project design and how to effectively communicate their ideas. Through this introductory course, teachers will be shown how to incorporate coding in cross – curricular activities, and be introduced to a variety of visual programming languages using tablet apps and other software.

10HRS

PROGRAMMING

CREATIVE & CRITICAL THINKING

DESIGN

DIGITAL LITERACY

CROSS CURRICULAR



“I have used what I learnt to plan ICT activities to embed teaching and learning activities in the classroom. These activities are Maths, English, dance and drama. Students enjoyed the related activities and were engaged as soon as they realised it related to coding and programming.”

[Participant, Coding in the Classroom]

Professional Learning in a Digital Age: 21st Century Tools Supporting 21st Century Teachers NEW

Workshop + Online Course (workshop delivery via webinar available)

Good twenty-first century teachers are good twenty-first century learners. Professional Learning in a Digital Age (PLDA) is a four-week blended course that equips teachers and school leaders with the knowledge, skills and tools needed for personalised, professional learning in a digital age. With an emphasis on learning through online participatory cultures (Clinton, et. al. 2006), the course explores the role of communication, critical thinking, collaboration and creativity. The course also examines the role of current technology tools for developing a Personal Learning Network (PLN), including Google Apps for Education, Google Plus Communities, Twitter and Feedly.

21.5HRS

QTC REGISTERED

PLN

CRITICAL THINKING

DIGITAL LITERACY

CREATIVITY

BLENDED LEARNING

COMMUNICATION

COLLABORATION



“Congratulations to everyone. This is an original and inspirational way to share ideas. Whilst at times applying this new knowledge has been frustrating and very time consuming, overall it has been a worthwhile experience. Amazing!!”

Neil

[Participant, Professional Learning in a Digital Age]

“I really enjoyed the two methods of delivery (face-to-face / online). The four weeks were very hectic but achievable. It actually empowered me to research how other teachers use technology whereas before I felt I had too much to do. It changed my focus!”

[Participant, Professional Learning in a Digital Age]

“I feel I have gained so much [from] this course. The pace of technology is moving far more quickly than I can keep up with and although it certainly doesn't come naturally to me, I found the concepts and methods of collaboration really interesting.”

[Participant, Professional Learning in a Digital Age]

“I'm doing Professional Learning groups at school next fortnight on building a Professional Learning Network, starting with Twitter and Feedly. Then next term I'm going to look at writing on the reading with staff. So, as you can see, this course has been a fantastic opportunity for me to learn new skills and now I will be able to share them with the rest of our staff! Thanks again for a fun and challenging course!”

Alison

[Participant, Professional Learning in a Digital Age]

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MACICT PRIORITY

Enhance Teaching & Learning

Special Events

These one-off events are an opportunity for teachers to learn from special guest speakers who have deep knowledge and expertise.

Epic Learning!

Featuring international guests Peggy Sheehy and Marianne Malmstrom

This day explored the ways in which games, whether dedicated to education or off the shelf, can open up opportunities for engagement and learning for all students. Presenters demonstrated programs where games such as World of Warcraft and Minecraft are truly igniting learning and participants got the opportunity to explore these programs during a hands-on session.

Playing and Learning with LEGO® StoryStarter

Featuring international guest Chris Rogers

Through play, children engage with and explore the world around them. Researchers and educators have long recognised the benefits of harnessing the spirit of curiosity and experimentation inherent in play to support and enhance children's learning. Many forms of children's play have imaginative exploration and expression at their heart, so it is no surprise that play is often considered the foundation of literacy development. This half-day workshop focused on LEGO® StoryStarter as a resource to support literacy development in the K-4 classroom. By capturing stories generated through play experiences, teachers can utilise children's individual interests and emerging capacities to develop language and expression, and build creative and problem solving skills.

'Future Pedagogies' Project Showcase Day: Panel Discussion and School Presentations

Featuring panelists Prof Lori Lockyer, Dr Kerry-Anne O'Sullivan, Judy O'Connell & Meredith Ash

The Future Pedagogies project explores how educators develop, employ and evaluate pedagogies to meet the evolving needs of their school communities. The project examines the relationship between pedagogical change and evidence-based practice. Participants examine issues in current research, identify pedagogy-related problems in their school context and develop a strong evidential base to work through solutions and effect meaningful change. The project considers the nature of pedagogical change in the context of the realities contemporary schools face, including the implementation of national teaching standards and curricula, impact of technology and pressures of high stakes testing.

For the showcase day MacICT invited educators to attend a panel discussion entitled "Future Pedagogies: What's Your Vision?" and listen to the presentations by each school's on their journey throughout the project.



School Services

In response to an increasing need articulated directly to MacICT by school leaders, during 2015 MacICT expanded its services to offer personalised professional learning tailored to school and/or school community contexts. In practise this has resulted in MacICT running professional learning for entire school staff, training school mentor teams, designing personalised online courses, delivering keynotes. Most of the schools have identified similar needs, particularly in the area of supporting or moving towards BYOD environments.

Becroft Public School Project: 21st Century Learning Design

The project goal was to build teacher capacity in using relevant technology tools, enabling meaningful learning, as the school prepared to move towards a BYOD environment. This included the ability to use technology creatively throughout the stages of inquiry learning, develop fluency in cross platform apps and design high quality inquiry based units and assessment tasks.

This involved developing an online course for the staff, training a team of teachers to act as mentors, delivering a keynote to staff and run whole school hands-on workshops on the following: developing a school-wide BYOD toolkit, design thinking as a strategy for creativity and innovation and digital learning design. MacICT project leaders conducted mid project follow-up meetings and will facilitate a school showcase.

Cherrybrook Technology High School: Designing Meaningful Learning For A BYOD Environment

The project goal was to inspire staff to reflect on current technology integration and provide a scaffold to enable the staff to work towards designing digital learning to better support a BYOD environment.

This involved delivering a whole school keynote, developing a short online short course introducing staff to GoogleApps@DEC and running a hands-workshop for the staff.

Future Pedagogies Project: Regional School Visits

MacICT Future Pedagogies project leaders delivered professional learning to staff when visiting regional schools to collect data for the Future Pedagogies project. Schools included: Evans River Community School, Nemingha Public School, Jindabyne Central School and Cessnock High School.

Professional learning included, Digital learning design, Design Thinking as a Strategy for Creativity and Innovation and Developing a School-Wide BYOD Toolkit.

GREAT TEACHING, INSPIRED LEARNING

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MACICT PRIORITY

Enhance Teaching & Learning

Student 'Boot Camp' Excursions

MacICT runs a variety of student excursions in the form of 'boot camps'. These boot camps are always aligned to professional learning courses MacICT have developed and provide a context for inquiry and discovery, leading students to become active problem solvers and engage in their own learning. Boot camps allow classroom teachers the opportunity to observe workshops run by MacICT experts modelling an effective pedagogical approach, and building a classroom teacher's capacity to implement projects back in their school contexts. They also provide an opportunity for school students to visit a university campus, potentially breaking down barriers to them furthering their education.

Most importantly, they provide MacICT developers practical experiences directly related to the content of courses they develop. Developers are able to explore pedagogical approaches, implement lesson ideas and experiment with use and management of the technology with large class groups. It provides our facilitators with an evidence base to support recommendations given in the professional learning courses they deliver.

Robotics Boot Camps

Robotics provides a highly engaging medium for creativity, critical thinking, collaboration and communication, four essential skills for learning and ICT within a curriculum context.

Game Design Boot Camps

Game design offers students a unique platform to address essential skills for learning. These include creativity and innovation, critical thinking, iterative problem solving, communication, collaboration, and information, media and ICT literacy. This Boot Camp is aimed to introduce students to 'Good Game Design' principles through activities that shift students' thinking from that of a player to a designer.

Augmented Reality Boot Camps

Using augmented reality (AR) in the classroom engages students far beyond worksheets, textbooks, video and traditional print.

Enabling students to create AR experiences related to syllabus outcomes will promote deeper learning of content, connect knowledge and information, and promote the development of design, creativity and ICT skills.

Game Development with Unity 3D Boot Camps NEW

Unity (unity3d.com) is a powerful, easy to learn game engine that is very flexible and well supported. Unity supports almost every platform and has a huge number of games made with it. Unity has a free version with loads of functionality allowing anyone to use it. Learning Unity is a great first step into learning how to use big game engines.

3D Printing Boot Camps NEW

This boot camp begins with students observing 3D printers in action along with practical advice about using them. In small groups they begin constructing creative solutions to 3D problems. Students learn to use 3D design computer

applications. After working with a collection of fun logic puzzles groups will design and print their own 3D puzzle using simple and free 3D design software.

Maker Day Boot Camps NEW

Students across each workshop will participate in specific computer coding activities, tactile building tasks and electronic circuit wiring. Program, build and electrify activities made at each Boot Camp will address a real world need, and students can also take them home to keep!

Coding Boot Camps NEW

Coding is becoming an increasingly important skill in 21st Century life, as technology becomes more integrated into our everyday activities. By learning to code, you build skills in mathematical and computational thinking, problem solving, systematic reasoning, project design and the communication of ideas.



100

ROBOTICS
BOOT CAMPS



30

GAME DESIGN
BOOT CAMPS (INCL UNITY)



12

AUGMENTED REALITY
BOOT CAMPS

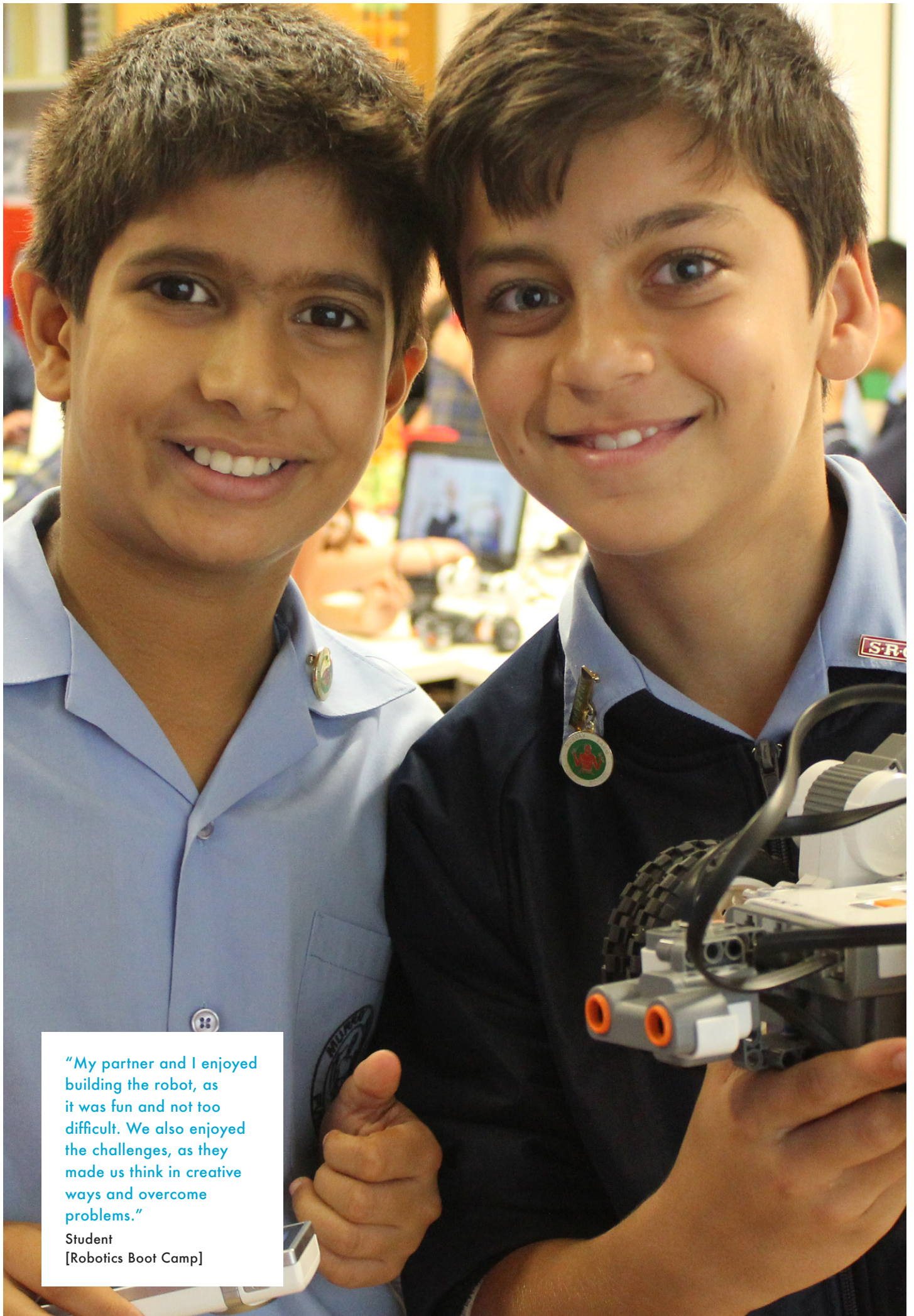
+ 11

CODING, 3D PRINTING, MAKER SPACES
BOOT CAMPS (BEGAN IN TERM 2 2015)



"I enjoyed how you got to build and take apart the robot and got to make adjustments and modifications to it. I also liked the different activities and how everyone could do something."

Student
[Robotics Boot Camp]



"My partner and I enjoyed building the robot, as it was fun and not too difficult. We also enjoyed the challenges, as they made us think in creative ways and overcome problems."

Student
[Robotics Boot Camp]



3612

STUDENTS PARTICIPATED IN MACICT'S WORKSHOPS



"[I enjoyed the] ability to figure out how to program the robot, quite different from html coding. It was also pretty interesting to hear my partner's ideas in order to solve a certain problem."

Student
[Robotics Boot Camp]

"[I enjoyed] learning how to construct a LEGO robot and learning new things that are not provided at school."

Student
[Robotics Boot Camp]

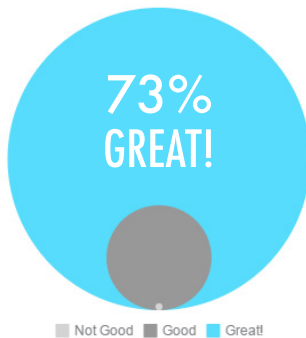
"I enjoyed making the auras so we could create a virtual tour of our school; it was really fun and engaging. It also was fun doing it with a small group of students so we could share and see what each other had to say and do."

Student
[Augmented Reality Boot Camp]

"Learning how to program something to move was fantastic. I have brought it back to school and every class is learning to program with Kodu."

Student
[Game Design Boot Camp]

Students: How would you rate this event?



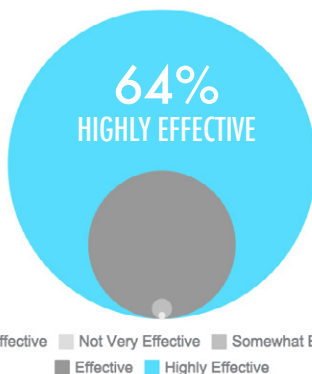
"The event was awesome for me as a teacher as I learnt so much about how they can be used within the classroom and how it all works as well as the tutorials that I can do with my class. As students the kids learnt so much about how they work, the coding that goes with it, how to program, take videos, save them and it was fantastic because it was so hands on which is how my students learn the most."

Teacher
[Robotics Boot Camp]

"I loved this because most of the time what you can do in class time is very very very limited but when I come here I can have freedom in school time."

Student
[Game Design Boot Camp]

Teachers: How effective was this Boot Camp in meeting curriculum outcomes?

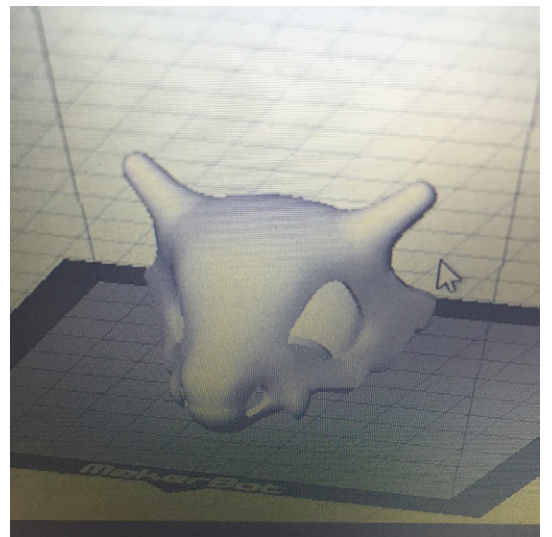
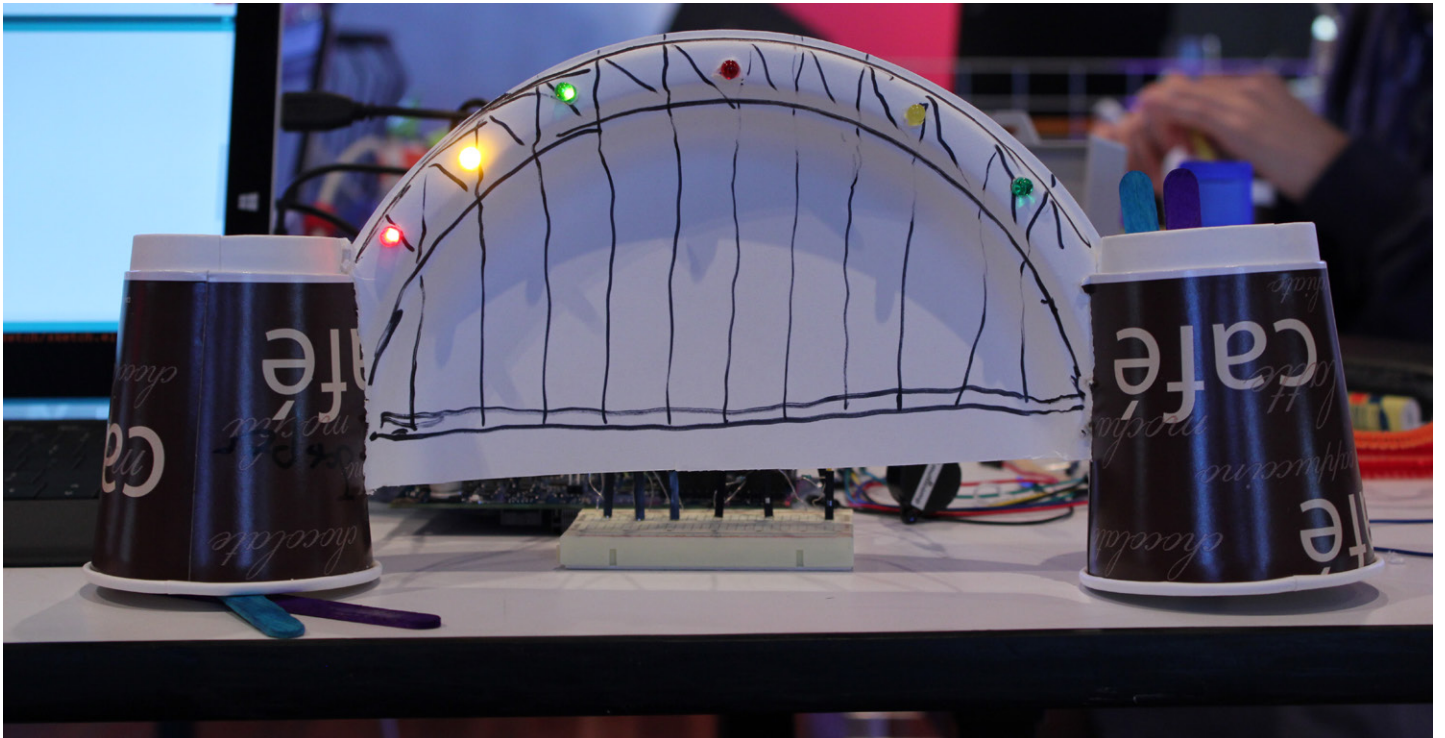
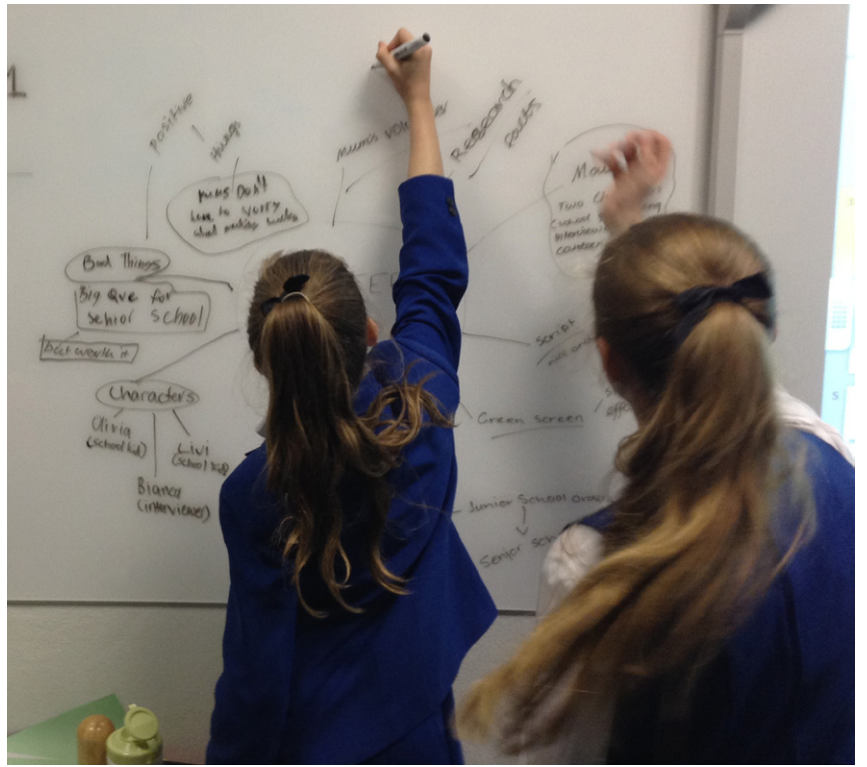
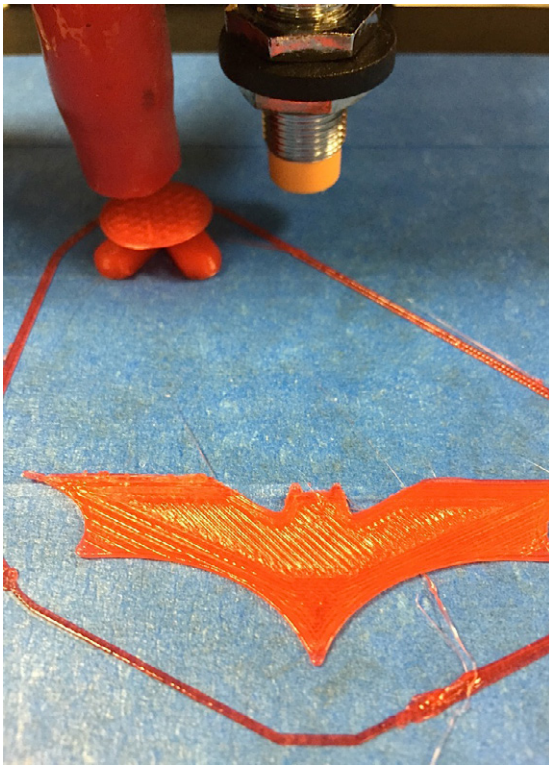


"This day was a "game changer" for most, if not all of the students in the way the workshops presented the various challenges to their enjoyment. They are reluctant to leave!!!"

Teacher
[Robotics Boot Camp]

"The opportunities for the students to solve problems rather [than] listening to someone telling them how was the best part of today's workshop. Similarly, the opportunity for the students to select their own challenges throughout the day was valuable."

Teacher
[Robotics Boot Camp]

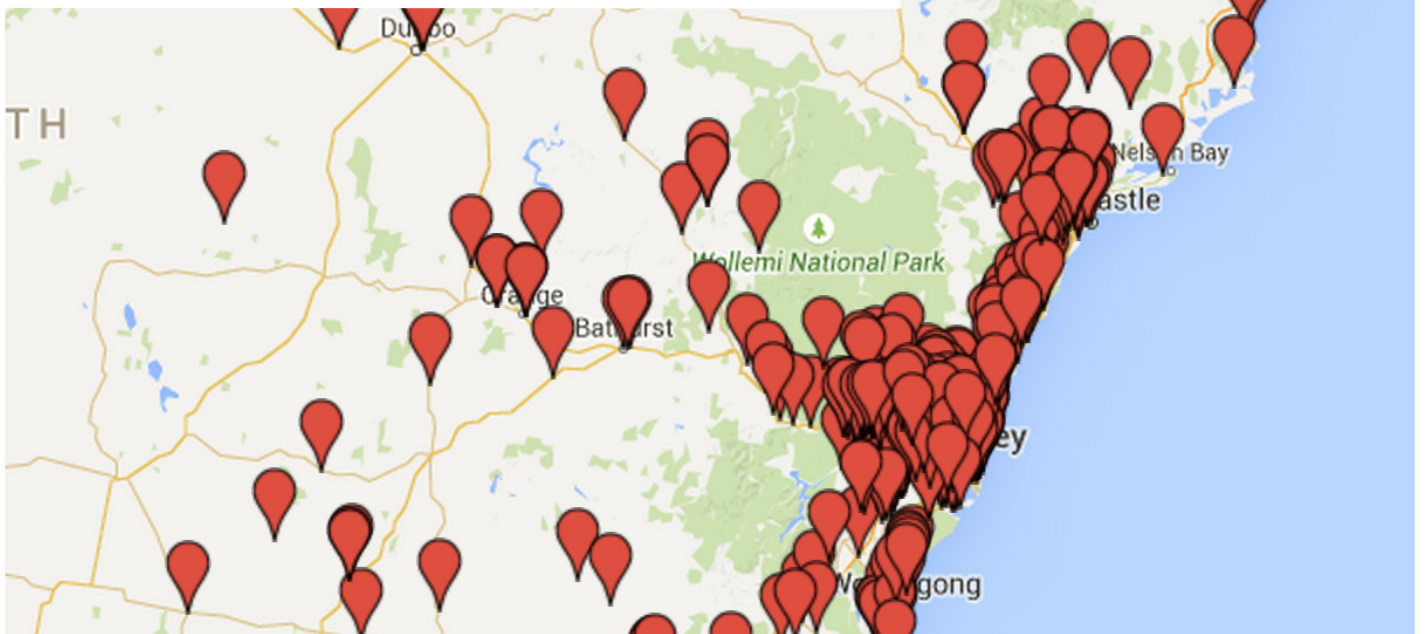
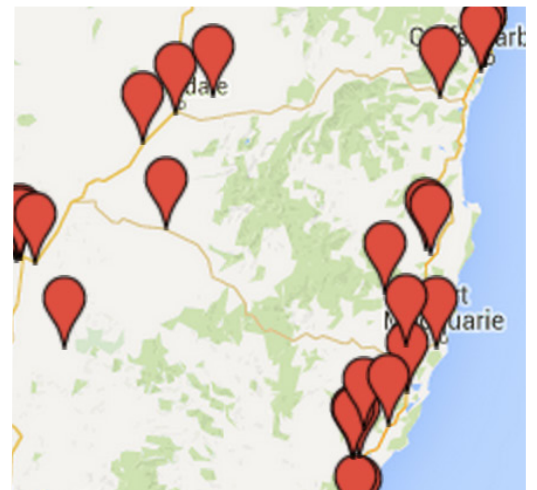
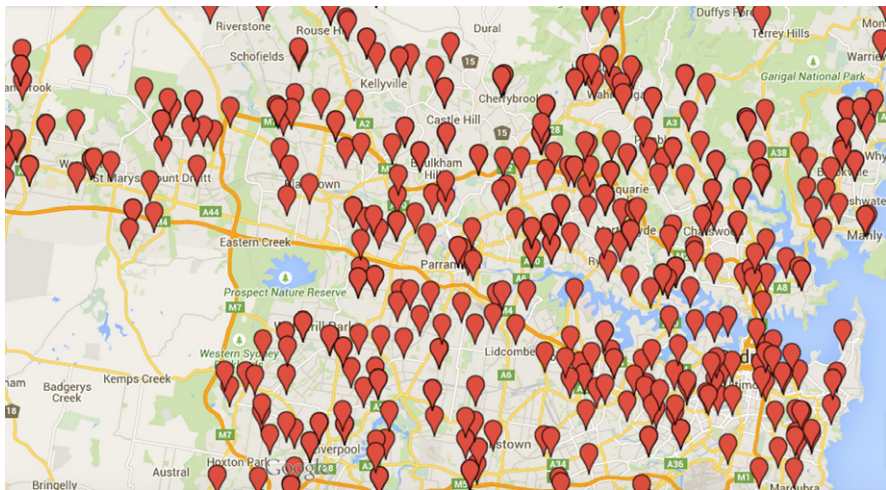
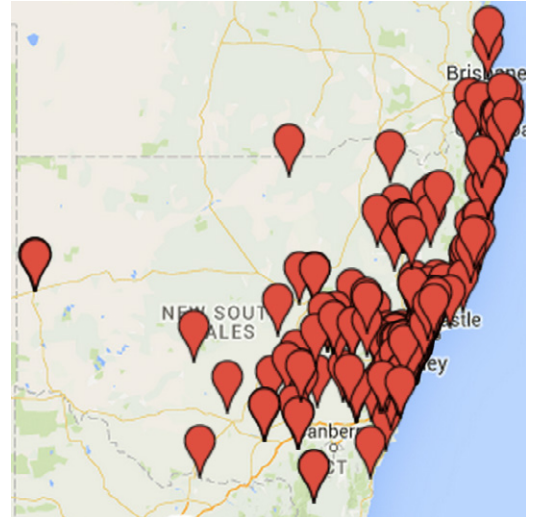


MacICT's Reach

Schools participating
in MacICT events in
2014 -15



VIEW THE INTERACTIVE
GOOGLE MAP
[CLICK HERE](#)



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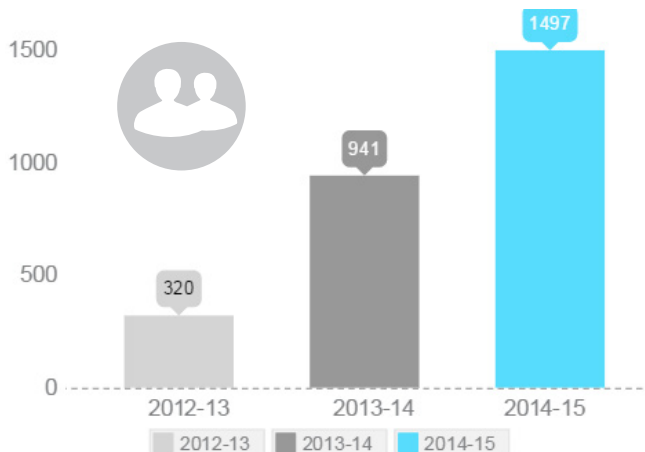
MACICT PRIORITY

Enhance Teaching & Learning

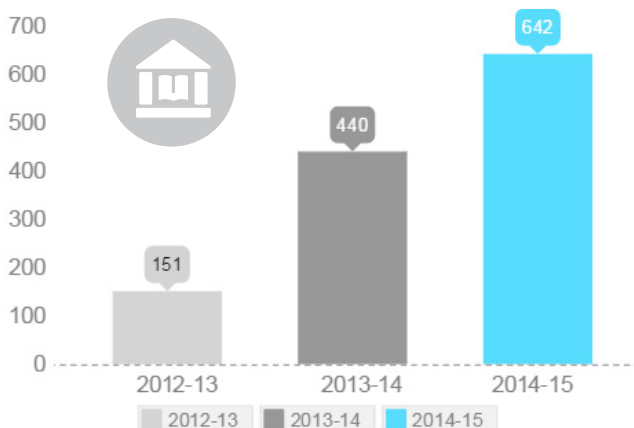
Data Comparisons

Are MacICT's participation rates increasing?

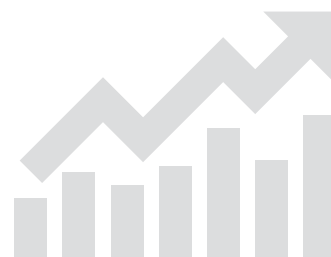
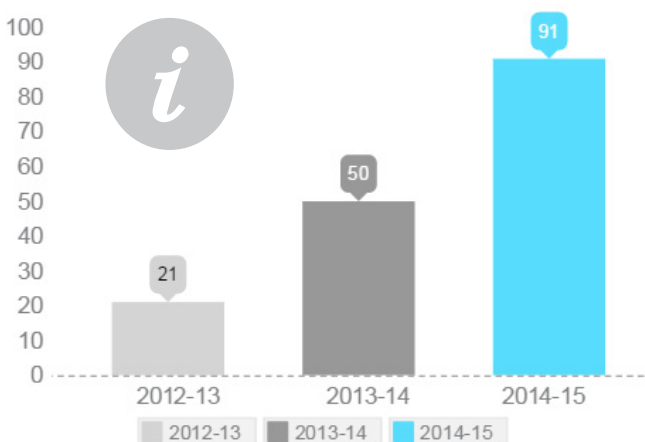
Number Of Participants



Number Of Unique Schools/Organisations



Number Of Professional Learning Events



This year has seen a

59%

increase in the number of participants for MacICT's professional learning services

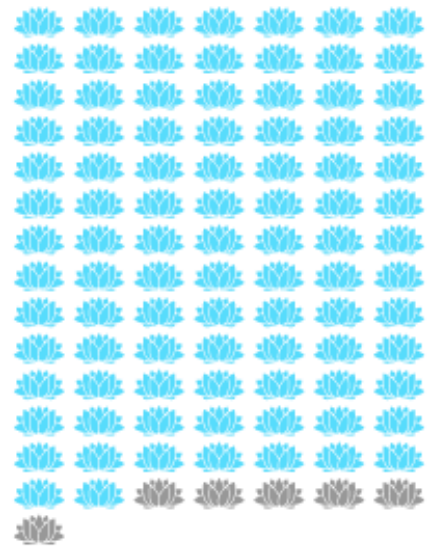
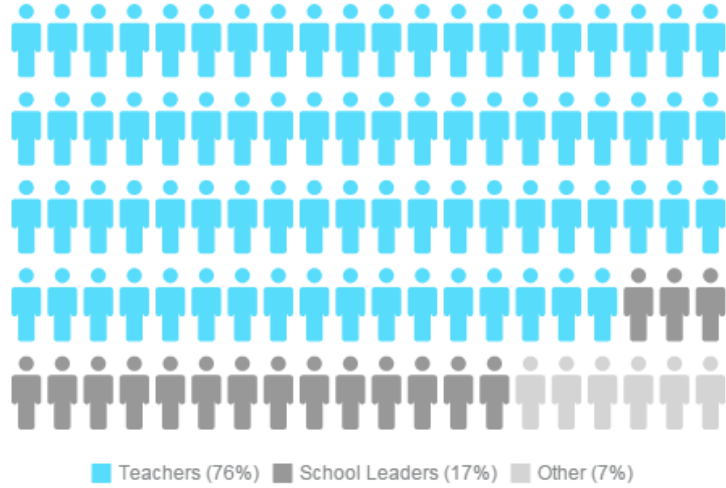
On average, MacICT's output of professional learning services has increased by

340%

from 2012-13 to 2014-15

Average percent increase of participants, schools and events

What are MaclCT's participant demographics?



■ Primary School (67%) ■ High School (25%) ■ K-12 (8%)

■ DEC (94%) ■ Other (6%)

GREAT TEACHING, INSPIRED LEARNING

Develop and maintain professional practice; Recognise and share outstanding practice and; initial teacher education

AUSTRALIAN CURRICULUM

RURAL AND REMOTE

Great teachers and school leaders; curriculum access for all

NSW QUALITY TEACHING MODEL

CONNECTED COMMUNITIES STRATEGY

Providing professional development opportunities, Increasing engagement of all children

HORIZON REPORT 2014 K-12 EDITION

1. Key trends
Accelerating Educational Technology Adoption in Schools

- Rethinking roles of teachers and how schools work
- Innovative pedagogical practices
- Shift to deeper learning approaches
- Hybrid learning designs

2. Important developments in technology in schools

- BYOD
- Cloud computing
- Games and gamification
- Wearable technology

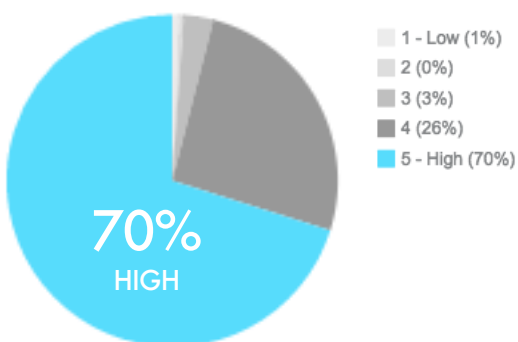
MACICT PRIORITY

Enhance Teaching & Learning

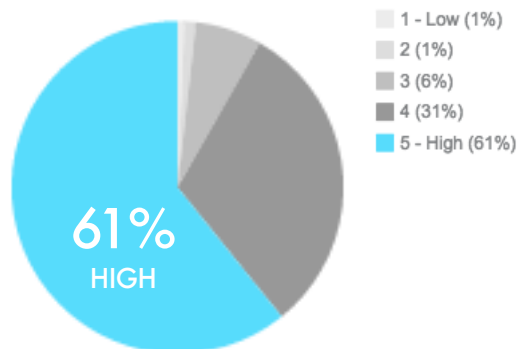
Evaluation

How are MacICT's activities rated by participants?

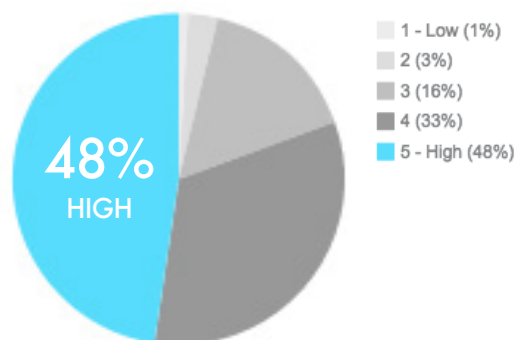
Please rate the course presenter's knowledge and preparation.



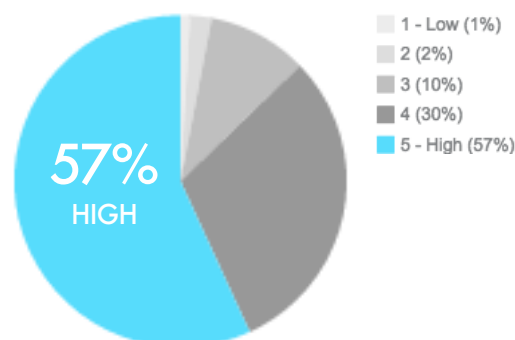
Please rate the course presenter's ability to convey concepts.



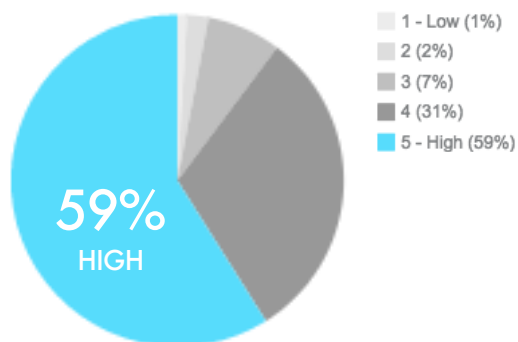
Please rate your learning experience for this course.



To what extent was this professional learning relevant to your role?



How relevant were the course resources?





Is MacICT having an impact on teaching practice?

Results from a survey sent to our distribution list at the end of the 2014-15 year.

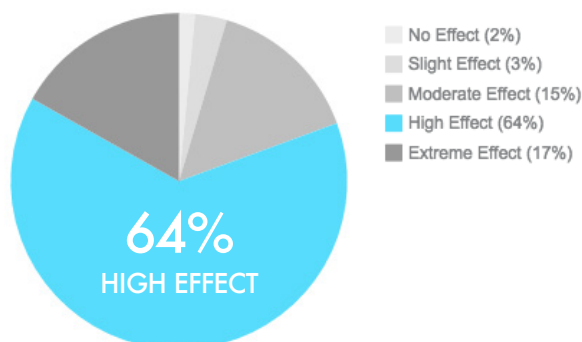
"[MacICT's courses] have been very practical, aimed at the right level, and immediately able to be applied in the classroom."

"I have become more aware of the way ICT can be implemented effortlessly into the current curriculum. I have also seen the increase in student engagement through the introduction of ICT into the mainstream curriculum."

"[The course] gave me lots of ideas to share with colleagues and students. Made me aware of possibilities I had previously not imagined. The course assisted me in developing more confidence and skills to share with my students."

"We've been able to implement \$28000 worth of iPads and setup. Also a school wifi system to support it. I could not have done it without the knowledge I gained at MacICT's course"

To what extent has your involvement with MacICT had a positive effect on your teaching and learning?



"The exposure to new technologies and apps within a pedagogical and student-centred context has enabled a smooth implementation of this new knowledge into my classroom practice with confidence."

"MacICT has introduced me to new resources that are reliable, and teacher / student friendly. They have also shown me new programs that I use within the classroom to engage my students and further education them in ICT and content in a more productive way.."

"I have been able to implement the ICT resources I was introduced to during the course in my programming. I strongly believe there are so many fantastic ICT resources out there, but it is very hard for teachers to find them or stay up to date on the developments. The course I attended gave me a long list of examples I can use in my day to day teaching, whether I have iPads at my disposal, laptops or desktop computers."

"[MacICT] has allowed me to understand how 21st century learners learn and implement different strategies into the classroom after making connections through the educational community."

"My role this year at my school involves giving professional development to staff members each week as well as taking GATs students and working with them on technology tasks so my learning at Mac ICT has helped me create and implement programs that could not have operated at the school unless training was undertaken."

"Skills learned and ideas shared at workshops have been integrated into my teaching programs, enriching the learning activities for my students. I have also been inspired to convince our Administration Team to offer a STEM program at our school."

"The Professional Learning in a Digital Age course has helped to guide many staff through online learning and collaboration activities to develop these skills and then apply elements of it in the classroom."

PURSUING AN INNOVATIVE RESEARCH AGENDA

Case Studies and Academic Research Projects at MacICT

MacICT professional learning courses are informed by research. Through participation in a professional learning course, participants are exposed to relevant research findings that impact the teacher's the design and delivery of student learning and their choice of enabling technologies. MacICT developers are expected to immerse themselves in relevant research and literature related to the courses they are developing.

Where possible, MacICT, in partnership with academic staff from Macquarie University, conducts its own research projects with NSW Department of Education and Communities teachers and/or schools and uses these finding to inform practice. Professional learning is always integrated with MacICT research projects with very positive outcomes for participating teachers and schools. The projects supported by the Centre all explore modern pedagogy that employs the latest appropriate technologies.

To date, MacICT research activities:

- are project-based, allowing for flexible, student-led inquiries
- promote evidence-based practice, exploring emerging pedagogies through an iterative process
- cast teachers as researchers, encouraging reflective practices
- build leadership capacity in teachers, supporting them as change makers in their schools.



MACICT PRIORITY

Persue an Innovative
Research Agenda

Funded Projects for 2015-16

Successful CS4HS Google Grant (Macquarie University/MacICT): Digital Technologies and Computational Thinking Pedagogies for the Junior Years

These workshops will be developed during semester 2, 2015. The primary focus of these workshops will be to help K-8 teachers develop their computational thinking pedagogies. It will draw upon contemporary innovative practices from across the world (as part of previous CS4HS programs) as well as prevailing literature in the computer science education field to progress the capabilities of teachers to teach the upcoming Australian Digital Technologies Curriculum. It will also conduct research into the difficulties that teachers experience when learning computational thinking concepts and pedagogies.

Successful Australian and Korean Research Grant (Macquarie University/MacICT) The Fusion of Science and Arts: an interactive digital platform to enhance STEAM (science, technology, engineering, arts and mathematics) teaching by science teachers.

Since the 2009, the Korean government has mandated STEAM integration be embedded across the curriculum, but teachers have experienced difficulties implementing these innovations due to the rigid structural separation of curriculum teaching in schools. On the other hand, in Australia curriculum flexibility has helped science educators and teachers to more easily integrate design, technology and sustainability into the science curriculum. Since 2011, the Korean government has attempted to enhance public awareness of the STEAM approach by supporting science concerts and science-art exhibitions in informal learning centres and via the mass media. The two countries can develop partnership as follows:

1. Curriculum comparison and defining STEAM approaches in science education.
2. Fusion of science and arts programs from Australia will be reviewed with scientists, artists and science educators from both countries.
3. A digital space for interactive activities and digital meetings will be created by the MacICT Centre at Macquarie University for teachers and students in both countries.
4. Translated activities and programs in the fusion of science and arts will be displayed in the digital space.
5. Two secondary schools in each country will be connected to the program .
6. Scientists, science educators and artists from both countries will review the STEAM teaching programs and share findings to the digital space. More schools will be connected to the digital space from both countries.
7. There is strong potential that graduate school students' academic research and teachers' action research in Korea and Australia will be designed and conducted.

Transmedia Storytelling: Weaving a StoryWorld Web

Project Team: Dr Nerida McCredie and Cathie Howe

What is transmedia storytelling and in what ways could it be used within educational settings for literacy learning? What opportunities might it offer to teachers and their students?

An investigation by the Macquarie ICT Innovation Centre into the ways Transmedia storytelling might allow teachers to re-imagine how they currently engage their class in an immersive literacy environment through the process of collaborative design.

In 2013, the research team at MacICT, Centre Manager Cathie Howe and Research Advisor Nerida McCredie, decided to explore the nature of literacy learning in the digital age. They developed a project for Stage Two teachers and students to investigate the possible worth of transmedia for learning. The project team explored the qualities and characteristics of transmedia, evaluated a wide range of digital design tools and created online Storyworlds to share and evaluate.

The project examined the potential value of transmedia storytelling for literacy learning by investigating the worth of our 'Weaving a StoryWorld Web' framework.

The Weaving a Storyworld Web framework is designed to assist teachers and students to engage in transmedia learning by designing an online, multimodal Storyworld created around a class novel or short story. It is a transmedia storytelling experience positioned with an educational context.

The framework has two key roles. The first is to equip students and their teachers to be able to explore, appreciate and articulate the distinctive features of transmedia texts.

It does this by providing them with a set of transmedia categories, mining, partnering and dreaming, by which they can identify, discuss, analyse and classify transmedia components.

Secondly, the Weaving a Storyworld Web framework provides teachers and students with a process, a set of steps, by which they are able to imagine, design and create a transmedia Storyworld of their own.

The following four considerations work together to increase the likelihood that the project participants will create a transmedia text and experience that is purposeful and authentic, addressing not only the learning outcomes of NSW curricula but also exploring and realising the potential of transmedia for learning. They work to minimise the likelihood that the project becomes somewhat of a gimmicky activity; the creation of an environment that, while it might be full of technical bells and whistles or animations and interactivity, fails to disclose insight into the richness of the central text or demonstrate the perceptive use of digital technologies to create original, dynamic contributions to the Storyworld.

1. A thorough understanding and appreciation of the central story.
2. Insight into the nature of transmedia which involves expanding upon and enriching a story.
3. The ability to describe, discuss and create multimodal components. Mining, partnering and dreaming refer to three categories that describe different styles of components, each of which is a particular way of responding to and expanding on a story.
4. A design process that facilitates the assembly of a complex, multimodal artefact.

MACICT PRIORITY

Pursue an Innovative
Research Agenda



Weaving a Storyworld Web Framework

Weaving a Storyworld Framework provides a design process, a set of procedures, to support and equip students and their teachers to successfully design, create and share an online Storyworld. This is a complex task.

The five steps of the design process, identified below, are strategically designed and sequenced to increase the likelihood that classes will create a Storyworld that demonstrates a high-level of insight into the central story as well as design a variety of multimodal components that, when woven together, generate a transmedia environment. That is, the steps leverage the likelihood that classes will create a Storyworld that is keeping with the attributes and practices of transmedia as set out by the project.

1. Develop a deep appreciation of the central story.
2. Select Story Points to mine, partner and dream about.
3. Design a variety of multimodal components.
4. Weave components together in a StoryWorld Web.
5. Share and host visitors to your Storyworld.

WEAVING A STORYWORLD WEB

A MACQUARIE ICT INNOVATIONS CENTRE PROJECT | CATHIE HOWE & DR NERIDA MCCREDIE | 2013

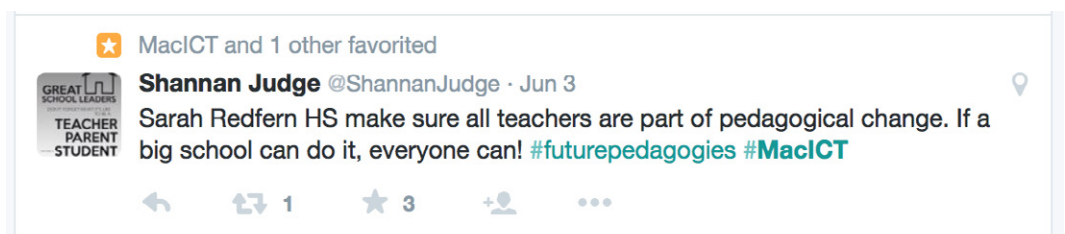
Future Pedagogies Project

Project Team: Michael Stevenson, Cathie Howe, Dr Kerry-Ann O'Sullivan (Chief Investigator), Prof Lori Lockyer

Future Pedagogies explores how educators develop, employ and evaluate pedagogies to meet the current and future needs of their school communities. The project examines the relationship between pedagogical change and evidence-based practice. Participants apply issues in current research to identify pedagogy-related problems in their school context and develop a strong evidential base to work through solutions and effect meaningful change. The project considers the nature of pedagogical change in the context of the realities contemporary schools face, including the implementation of national teaching standards and curricula, impact of technology and pressures of high stakes testing.

Research questions:

1. What are the skills that enable teachers to employ pedagogies suited to the specific learners and learning context?
2. What elements in a common language for pedagogy do schools employ to establish successful learning outcomes?
3. What are the necessary elements of pedagogical fluency and how can these be developed?
4. What role can contemporary technologies play in developing pedagogies for current and future learning needs?



MACICT PRIORITY

Pursue an Innovative
Research Agenda



Epping North Public School



Manly Village Public School



Sarah Redfern High School



Ermington West Public School



Cessnock High School



Evans River K-12 School



Jindabyne Central School



Nemingha Public School

“There is no one single effective teaching method or strategy. Teachers need to be proficient in many teaching practices and, more importantly, be able to assess their impact on students and adapt their teaching practices to assist students if they are not responding or engaged”

NSW Government, “Great Teaching, Inspired Learning,” p. 6





MacICT

Macquarie ICT Innovations Centre

Report prepared by Cathie Howe and Lyrian McGregor.
Layout and design by Lyrian McGregor.



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