PROGRAM

WEDNESDAY, 28 JUNE 2017

8.30am — OFFICIAL WELCOME TO ASERA 2017

Aerial Function Centre, Building 10, Level 7

	WATTLE Room	THOMAS Room	BROADWAY Room	JONES Room	HARRIS Room
9am – 9.40am SESSION 1	**Vaille Dawson, Katherine Carson** Teaching of argumentation and socio-scientific issues in three diverse schools **Chair: Simon Taylor**	**Lihua Xu, Russell Tytler, Joseph Ferguson** Embodied experience of balance in solving problems with levers **Chair: George Aranda**	**Gurinder Singh, Karen Haydock** Understanding the role of student questioning in their argumentation: Moving beyond Toulmin's models **Chair: Nuttawan Sirithon**	**Les Vozzo, Jessy Abraham** Investigating a flipped classroom approach to foster learning and engagement in science and technology education at the undergraduate level **Chair: Wendy Nielsen**	**Dorothy V Smith, Pamela J Mulhall, Richard F Gunstone, Christina E Hart** What Teachers Should Know About Contemporary Aust Scientists, and Why? **Chair: Teerana Chumsaeng**
9.45am – 10.25am SESSION 2	**Simon Taylor** Exploring a culture of co-operation and co-construction in year 9 science: New opportunities for science teachers and students working in flexible learning spaces **Chair: Vaille Dawson**	**George Aranda, Joseph Ferguson** Metarepresentational practices in an inquiry science classroom **Chair: Lihua Xu**	**Nuttawan Sirithon, Ekgapoom Jantarakantee** Developing grade 10 students' scientific explanations in the topics of forces, mass and laws of motion through an argument-driven inquiry approach **Chair: Gurinder Singh Homi**	**Wendy Nielsen, Helen Georgiou, Pauline Jones, Annette Turney** Multimodal resources in generating a digital explanation: Mapping the variety created by tertiary science students **Chair: Les Vozzo**	**Teerana Chumsaeng, Ekgapoom Jantarakantee** Using a context-based approach to develop grade 10 students' scientific explanation ability in an equilibrium unit **Chair: Dorothy V Smith**

MORNING TEA 10.25am to 10.45am - Breakout areas & Balcony

POSTER PRESENTATION - SESSION 1 - Aerial Function Centre, Lobby Area

10.25am – 11.30am	**Yi-Fen Yeh** Patterns of students' diagram construction: A case of species extinction	**Thepsathit Taruwan, Parichat Saenna** Development of critical thinking for grade 11 students using problem-based learning with forensic science activities	**Eunyoung Jeong** The effect of introducing socio-scientific issues in a college biology course for pre-service science teachers	**Shiho Miyake** A study on creating a picture-story animation to communicate an environmental problem	**Panisara Supanya, Jeerawan Ketsing, Ratcha Chaichana** Grade 10 students' scientific argumentation skills on micro-plastic waste

WEDNESDAY, 28 JUNE 2017			WATTLE Room	THOMAS Room	BROADWAY Room	JONES Room
	10.50-11.30am	SESSION 3	**William. P. Palmer, David Treagust** Physical and chemical change in textbooks: twenty years on! **Chair: Linda Hobbs**	**Boris Handal, Kate Winchester, Kevin Watson, Marguerite Maher** STEM education curricular models **Chair: Carol R Aldous**	**Ko-Hui Lu , Pei-Yu Yao, Kuo-Hua Wang** High school teachers' perceptions of teaching collaborative problem solving skills in science and mathematics **Chair: Kazumasa Takahashi**	**Jessy Abraham, Lynde Tan** "It was interesting, but some of it almost killed my brain": Student responses to senior secondary physics curriculum in NSW **Chair: Jennifer Yeo**
	11.35am – 12.15pm	SESSION 4	**Hunkoog Jho** The parallel vision and creativity between science and art in the 20th century: A case study of paintings of Rene Magritte from the Copenhagen interpretation **Chair: William P. Palmer**	**Carol R Aldous** Boundary crossing, STEM industry engagement and communities of practice: Bridging the gap between theoretical science knowledge and its application in society. Preliminary findings **Chair: Frackson Mumba**	**Kazumasa Takahashi, Tadahiro Koizumi** Japanese pre-service science and technology teachers' views on science and technology: Why are they different from those of typical definitions found in the international literature? **Chair: Ko-Hui Lu**	**Jennifer Yeo, John Kenward Gilbert** Identifying and comparing representational schemes for producing interpretive explanations in dynamics, thermal physics and electromagnetic induction **Chair: Lihua Xu**
	12.20pm – 1pm	SESSION 5	**Linda Hobbs, Chris Speldewinde, Coral Campbell** Learning to teach out-of-field: Positioning, agency, continuity and expertise **Chair: Hunkoog Jho**	**Frackson Mumba, Laura Ochs, Sara Blankenship, Vivien Mweene Chadalengula** Essential features of inquiry in the *American Biology Teacher* and *Journal of Chemical Education* journals **Chair: Boris Handal**	**Pei-Yu Yao, Ko-Hui Lu, Kuo-Hua Wang** Science and mathematics teachers' perceptions of students' collaborative problem solving skills **Chair: Kazumasa Takahashi**	**Wendy Jobling, Lihua Xu, Wanty Widjaja** Professional noticing of student science and mathematics reasoning by primary school teachers **Chair: Jessy Abraham**
	LUNCH 1pm to 1.45pm - Breakout areas & Balcony					
	1.50pm – 2.30pm	SESSION 6	**Léonie Rennie** Values relating to the certainty/uncertainty of scientific knowledge **Chair: Deya Chakraborty**	**Anupong Praisri, Chatree Faikhamta, Vittaya Punsuvon** The development of students' mental models of chemical equilibrium through argumentation within model-based learning **Chair: Karen Murcia**	**Christine Preston** Pre-service primary teachers' voices: Reflections of their experiences in learning to teach science and technology **Chair: Ange Fitzgerald**	**Jutamas Kanwong, Pongprapan Pongsophon, Teerasak E-kobon** A teacher's perspective on the good practice of promoting moral reasoning in a biology classroom **Chair: Jennifer Mansfield**
	10.25am –	SESSION 7	**Deya Chakraborty** Science practical work of IER: nature, impact and improvement **Chair: Léonie Rennie**	**Karen Murcia, John Williams** Youth STEM career choices **Chair: Anupong Praisri**	**Ange Fitzgerald** Inspiring primary science pre-service teachers as researchers **Chair: Christine Preston**	**Jennifer Mansfield** Exploring the nature of challenges to science teachers' pedagogical equilibrium when organising for teaching **Chair: Jutamas Kanwong**

WEDNESDAY, 28 JUNE 2017							
AFTERNOON TEA 3.15pm to 3.30pm - Breakout areas & Balcony							
		WATTLE Room	**THOMAS Room**	**BROADWAY Room**	**JONES Room**	**HARRIS Room**
3.35pm – 4.15pm	SESSION 8	**Natchiya Tananuson, Jeerawan Ketsing, Wirasak Fungfuang** Scaffolding grade 10 students' scientific conceptions on digestive system through the lens of epistemological and affective perspectives **Chair: Nattakid Thongnoy**	**Maya Marcus, Sonia Saddiqui** Integration with arts: Can STEAM education be used to attract and retain young women in STEM? **Chair: David F. Treagust**	**Kelly-Anne Jawerth, Jennifer Donovan** Determining the most appropriate model to guide policy development for gifted and talented science students in NSW **Chair: Sirinoot Khemkong**	**Nouf Mohammed Albadi, Jean Harkins, John Mitchell O'Toole** Saudi Year 10 Physics teacher and student perceptions of recent reforms in Secondary Science education **Chair: Reece Mills**	**Leah Moor, B.Pearce** Toward a Culturally Contextualised Australian Science Classroom: Addressing Post-colonial Tensions about Scientific Views **Chair: Megan Ennes**
4.20pm – 5pm	SESSION 9	**Nattakid Thongnoy, Sasithep Pitiporntapin, Pramote Chumnanpuen, Partorn Phongpaijit** Enhancing 10th Grade students' scientific explanation of ecosystems using socio-scientific issue-based teaching **Chair: Natchiya Tananuson**	**Agung W. Subiantoro, David F. Treagust, Kok-Sing Tang** Development and implementation of socio-scientific issues-based learning in Indonesian secondary school biology: Students' experience and perceptions on the issue of breastfeeding **Chair: Maya Marcus**	**Sirinoot Khemkong, Jeerawan Ketsing and Teerasak E-gobon** Grade 11 gifted students' scientific reasoning ability **Chair: Kelly-Anne Jawerth**	**Reece Mills, Louisa Tomas, Brian Lewthwaite** Using student-constructed animation to facilitate middle school students' conceptual change in earth science **Chair: Nouf Mohammed Albadi**	**Megan Ennes, M.Gail Jones, Emily Cayton, Katherine Chesnutt, Pamela Huff** Educator self-efficacy in informal science centers **Chair: Leah Moore**
FIRESIDE CHAT 5.30pm to 7pm – Building 10, Level 4 – School of Education (use lifts to Level 4)							

THURSDAY, 29 JUNE 2017		WATTLE Room	THOMAS Room	BROADWAY Room	JONES Room	HARRIS Room
	8.30am – 9.10am SESSION 1	**Deepa Dewali Chand, John Kenny, Sharon Fraser** Drawings as a vehicle for student generated representations to learning of sciences in Fijian primary schools **Chair: Stephen Fogwill**	**Paper withdrawn**	**Sung-Tao Lee, Ke-Hsuan Zeng** A study of science reading scaffolding effects for high school students toward science news texts in Taiwan **Chair: Mpunki Nakedi**	**Rebecca Cooper, Karen Marangio** Establishing a school and science education partnership: A science teacher education perspective **Chair: Joanne Burke**	**Pattamporn Pimthong** The development of an activity for promoting pre-service teacher technological pedagogical content knowledge (TPCK) **Chair: Tim Strohfeldt**
	9.15am – 9.55am SESSION 2	**Zeynep Yaseen** Using representational challenge for productive scientific discussions in Year 11 science classes **Chair: Stephen Fogwill**	**Keith Skamp** Teaching primary science constructively: Editor's reflections on changes over 20 years of this research-based university text **Chair: Jennifer Donovan**	**Saed Sabah** Inquiry-based instruction in science classrooms in Qatar: findings from TIMSS 2015 **Chair: Sung-Tao Lee**	**Joanne Burke,** Case studies of excellent science teachers' beliefs and practice **Chair: Rebecca Cooper**	**Davis Baptiste Jn, David Palmer, Jennifer Archer** Preservice teachers' conceptions of how to increase students' interest in science **Chair: Wilhelmina van Rooy**
	10am – 10.40am SESSION 3	**Stephen Fogwill** Student-generated analogies: Windows towards canonical understandings of science **Chair: Zeynep Yaseen**	**Jennifer Donovan, Carole Haeusler** Should primary children be taught the atomic-molecular theory of matter? **Chair: Keith Skamp**	**Mpunki Nakedi** The South African science schooling curriculum on issues of scientific literacy in addressing climate change – a policy critique **Chair: Sung-Tao Lee**	**Christine V. McDonald** Who is teaching science in our high schools? Exploring factors influencing pre-service secondary science teachers' decisions to pursue teaching as a career **Chair: Joanne Burke**	**Wilhelmina van Rooy** Pre-service primary teachers' knowledge and understanding gained about the environment from their participation in Clean Up Australia **Chair: Pattamporn Pimthong**
	MORNING TEA 10.40am to 11am - Breakout areas & Balcony					
	POSTER PRESENTATION - SESSION 2 - Aerial Function Centre, Lobby Area					
	8.30am – 9.10am	**Hsiao-Hui Lin, Sieh-Hwa Lin, Hsin-Kai Wu** Developing and Validating a Constructed-Response Assessment of Scientific Abilities: A Case of the Optics Unit	**Sung-Pei Chien, Hsiao-Hui Lin, Hsin-Kai Wu, Pai-Hsing Wu** Examining the impacts of science teachers' practice and beliefs about technology-based assessments on students' performances: A hierarchical linear modelling approach	**Sung-Tao Lee, Ying-Chun Chen** The explorations of frames and framing within science news regarding genetically modified organisms in Taiwan	**Kudanaree Tanwannarak, Chatree Faikhamta, Wachiryah Thong-asa** Enhancing Grade 11 Students' Views of Nature of Science through Explicit Nature of Science Approach with Argumentation	**Hayashi Nakayama, Tomokazu Yamamoto** Designing a science education lesson: changing preservice teachers' views on science lessons in undergraduate school	**Kanyarat Thanaphatwetphisit, Chittamas Suksawang, Boontana Wannalerse** Thai science students' conceptions of stoichiometry

THURSDAY, 29 JUNE 2017			WATTLE Room	THOMAS Room	BROADWAY Room	JONES Room	HARRIS Room
	11.05am – 11.45am	SESSION 4	**Karen Marangio** Victorian teachers of psychology survey: Psychology is a science? Most definitely! **Chair: Tracey-Ann Palmer**	**David-Samuel Di Fuccia** Lab work as an everyday assessment tool **Chair: Jim Scott**	**Coral Campbell, Chris Speldewinde, Christine Howitt, Amy MacDonald** Early childhood teachers' STEM pedagogy and practices: A snapshot **Chair: Kimberley Pressick-Kilborn**	**Dean Cairns, Shaljan Areepattamannil** Exploring the relations of teacher-directed instruction, adaptive instruction and enquiry-based instruction to science achievement and dispositions in 68 countries **Chair: Wan Ng**	**Joseph Ferguson, George Aranda, Radhika Gorur** Studying teacher intervention through example: Purposeful selection from rich video data sets **Chair: Ruth Fentie**
			ASERA AGM 11.50am to 12.45pm ~ THOMAS Room				
			LUNCH 12.50pm to 1.45pm - Breakout areas & Balcony				
	1.50pm – 2.30pm	SESSION 5	**Mareike Frevert, David-Samuel Di Fuccia** Contemporary science in chemistry teacher education **Chair: Tim Strohfeldt**	**Joseph Ferguson** Exploring the nature of science students' computer-mediated abductive reasoning **Chair: Siriya Thongloleart**	**Worawan Phanpreeda, Sasithep Pitiporntapin, Pramote Chumnanpuen, Suradet Sritha** Enhancing of Grade 10 students' environmental action using socio-scientific issues-based teaching. **Chair: Willeke Rietdijk**	**Brendan Cooney, Azra Moeed** Making Connections **Chair: James P. Davis**	**Michael Tynan, Tom Keenan** Evaluating the Aboriginal summer school for excellence in technology and science (assets) **Chair: Debra Panizzon**
	2.35pm – 3.16pm	SESSION 6	**Sasithep Pitiporntapin, N. Yutakom, T. D. Sadler** Case studies of the development of pre-service science teachers' understandings and practices of socio-scientific issues (ssis)-based teaching through an online mentoring program **Chair: Mareike Frevert**	**Bette Davidowitz, Marissa Rollnick, Marietjie Potgieter** A comparison between the knowledge bases of chemists and teachers for teaching organic chemistry **Chair: Joseph Ferguson**	**Willeke Rietdijk, Andri Christodoulou, Marcus Grace, Ralph Levinson** Mapping controversies: a pedagogical approach for communicating about socio-scientific issues **Chair: Worawan Phanpreeda**	**James P. Davis, Alberto Bellocchi** Using a sketch map as a conceptual metaphor: A micro-sociological perspective **Chair: Kathryn Garthwaite**	**Anne T Galvin, Rekha B Koul** Impacts of NAPLAN preparation impacting on the teaching of science to Stage 3 students in New South Wales schools? **Chair: Michael Tynan**

THURSDAY, 29 JUNE 2017			WATTLE Room	THOMAS Room	BROADWAY Room	JONES Room	HARRIS Room
	3.20pm – 4pm	SESSION 7	**Tim Strohfeldt, Margaret Marshman** Partnering with preservice teachers for a school science extension program **Chair: Mareike Frevert**	**Siriya Thongloleart, Pattamaporn Pimthong, Aphisit Songsasen** The study of 10th Grade students' conceptions in forming of ionic bonding and motivational beliefs through conceptual change approach: analogy and application software (4d elements©) **Chair: Joseph Ferguson**	**Kian Keong Aloysius, Ong Ai Choo Jennifer, Yeo Kim Chwee Daniel, Tan Poh Hiang** Investigating experienced teachers' pedagogical content knowledge (PCK) in representation-based instruction: A sociocultural perspective **Chair: Worawan Phanpreeda**	**Kathryn Garthwaite** Developing a model to analyse secondary students' perceptions of nature in relation to a biodiversity rescue **Chair: James P. Davis**	**Deborah Corrigan, Debra Panizzon** Exploring the role of STEM education in relation to innovation and entrepreneurship as economic change agents **Chair: Anne T Galvin**
	AFTERNOON TEA 4pm to 4.20pm - Breakout areas & Balcony						
	CONFERENCE DINNER 7pm to 10pm – Dockside, Cockle Bay						

Conference Dinner

The Conference Dinner is to be held in beautiful Sydney Harbour at Dockside, Cockle Bay at the rooftop venue of L'Aqua. It is a 20 minute walk from the conference venue, along an interesting route – the old Goods Line linking Darling Harbour to Central Station and taking you past the Chinese Gardens and Sydney's new International Conference Centre.

Canapes and Pre-dinner drinks will be served at 7pm out on the balcony overlooking spectacular Darling Harbour.

FRIDAY, 30 JUNE 2017		WATTLE Room	THOMAS Room	BROADWAY Room	JONES Room	HARRIS Room
9.15am – 9.55am	SESSION 1	**Jim Scott** Assessing the impact of formative practices on science learning outcomes: A mixed methods study **Chair: Ken Silburn**	**Caroline McCarty** What influence do science teachers have in creating positive learning experiences for learners of science? **Chair: Dylan Roche**	**Donna King, Terry Lyons, Les Dawes, Tanya Doyle, Megan O'Loughlin** Affordances and constraints of pre-service teachers' design of STEM Resources on Demand (STEMROD) **Chair: David Jeffries**	**Jan van Driel, Rebecca Cooper** Analysing science teachers' pedagogical content knowledge: the second PCK summit **Chair: Kathleen Hayes**	**Matthew Kearney, Tracey-Ann Palmer, Sandy Schuck** Optimising mobile learning in Science Education Part 1 **Chair: Peter Aubusson**
10am – 10.40am	SESSION 2	**Ken Silburn** Engagement of STEM: "Stuff that works" **Chair: Jim Scott**	**Dylan Roche** Making reliable judgments of quality in senior science assessments **Chair: Caroline McCarty**	**David Jeffries, David Curtis** STEM subject choice in Year 12: the influence of demographic characteristics, attitudes towards science and achievement **Chair: Donna King**	**Kathleen Hayes, Merryn McKinnon John Cripps Clark** Teacher's perspectives on the role of collaborative partnerships in secondary science education **Chair: Jan van Driel**	**Muneera Bano, Sandy Schuck, Didar Zowghi, Peter Aubusson, Meera Varadharajan** Optimising mobile learning in Science Education Part 2 **Chair: Matthew Kearney**
MORNING TEA 10.45am to 11.05am - Breakout areas & Balcony						
11.10am – 11.50am	SESSION 3	**George Aranda, Joseph Ferguson, Russell Tytler and Radhika Gorur** The roles of drawing in reasoning and learning in the science classroom **Chair: Peter Hubber**	**Gillian Kidman, Niranjan Casinader** Frameworks guiding the teacher's work in scientific inquiry **Chair: Ewa Biviano**	**Sally Birdsall Bev France** Students' beliefs about pest animals: An international comparative study **Chair: Susanne Digel**	**Linda Hobbs, Scott Mcleod, Barry Plant** Sustaining STEM-based reforms in secondary schools: Insights into successful implementation **Chair: Wan Ng**	**Jane Hunter** Principals leading the STEM agenda in Australian primary school education: Influence, tone and responsibility **Chair: Kathryn Paige**
11.55am – 12.35pm	SESSION 4	**Peter Hubber, Christine Preston** Investigating representational pedagogies for learning electricity in Year 6 **Chair: George Aranda**	**Ewa Biviano, Gillian Kidman** When is a chemistry experiment an investigation? **Chair: Niranjan Casinader**	**Susanne Digel, David Treagust, Alexander Kauertz, Patrick Löffler, Jochen Scheid** Beyond content knowledge - how modelling skills and student concepts interrelate in context-based tasks **Chair: Sally Birdsall**	**Wan Ng, Jennifer Fergusson** State of Years 9 and 10 students' views of science and science education **Chair: Linda Hobbs**	**Kathryn Paige, David Lloyd** Fresh water literacies: an interdisciplinary study with primary teachers and researchers **Chair: Jane Hunter**

FRIDAY, 30 JUNE 2017						
	LUNCH 12.40pm to 1.30pm - Breakout areas & Balcony					
			WATTLE Room	**THOMAS Room**	**BROADWAY Room**	**JONES Room**
	1.35pm – 2.15pm	SESSION 5	**Kathy Smith** Quality learning- teachers changing their practice **Chair: Hye-Eun Chu**	**Annette Hilton, Geoff Hilton** Proportional reasoning for science understanding: A science curriculum audit **Chair: Onanong Inta**	**Peter Aubusson, P.F. Burke, Kimberley Pressik-Kilborn** Barriers to teaching of primary science and technology **Chair: Tracey-Ann Palmer**	**Leissa Kelly, Mary Gibson, Merryn Dawborn-Gundlach** Collaborative partnerships between Specialist Science and Technology Centres and Universities **Chair: Zeynep Yaseen**
	2.20pm – 2.55pm	SESSION 6	**Hye-Eun Chu, Kok Siang Tan, Daniel Kimchwee Tan** Investigating factors for implementing assessment innovation in science classrooms **Chair: Kathy Smith**	**Onanong Inta, Pattamaporn Pimthong, Teerasak E-kobon** The development of Grade 10th students' critical thinking and conceptions on nucleic acid and protein by using project-based learning **Chair: Annette Hilton**	**Kimberley Pressick-Kilborn, Tracey-Ann Palmer** Which way forward for teaching primary science and technology? Cases of generalist and specialist teachers in NSW schools **Chair: Peter Aubusson**	