ESERA 2019 Pre-Conference Workshop

1. *Title of the workshop*

   New perspectives for Research on Early years Science

2. *Contact information*

   Early Years Science SIG Coordinators

   - Coral Campbell,Faculty of Arts and Education, Deakin University.Locked Bag 20000, Geelong 3220. Telephone +61 3 52271485. Email coral.campbell@deakin.edu.au
   - Estelle Blanquet, ESPE d'Aquitaine, University of Bordeaux, 160 Avenue de Verdun, 33305 Merignac. Telephone +33 671 746 736. Email estelle.blanquet@u-bordeaux.fr

3. *Requested maximum number of participants* 35

4. *Short description of relevant areas of expertise for each workshop facilitator*

   Coral Campbell is an Associate Professor in the School of Education at Deakin University. She has contributed significantly to the fields of science, science education and educational research over many years. Coral's research has a sustained focus on science education, teacher professional learning and students' learning in science and her research projects reflect this interest in developing greater understandings of how teachers and students learn and ways to enhance this learning. She initiated and co-edited a text in Early Childhood Science Education – the first in Australia and now on its third revision. Coral has worked in partnership with many early childhood centres and schools locally and has contributed to an enhancement of early childhood science education through the development of early childhood units for delivery to pre-service early childhood teachers (science, science and technology, science and the environment and STEM).

   Estelle Blanquet is an associate professor in Science Education at the Ecole Supérieure du Professorat et de l'Education d'Aquitaine (ESPE) of the University of Bordeaux (France). Her main research interests are the nature of science at primary school level and the study of experimental inquiry practices in Kindergarten. She has been training primary school teachers in science since 2000. She is a part of the French e-Fran-funded project Perseverons for developing the appropriation of NoS by Kindergarten teachers and children.

   Workshop abstract (for recruiting participants)

   This workshop will bring together two linked aspects of recent research in early years' science education. Following on from the previous ESERA SIG meeting, the opportunities for furthering our research through publication needs to be discussed and directions set for the next few years. It is anticipated that this will build on the work of the ESERA Early Years Science Workshop "Current trends in Early Years Science Research" which is being run at ESPE d'Aquitaine (Bordeaux, France) in April 2019. This international workshop, supported by ESERA, will interrogate aspects of science education research through the lens of early childhood.

5. Workshop description (*maximum 3 pages*)

   Goal of the workshop

   The goal of the workshop is to offer participants the opportunity to make real and effective links with other international researchers. Early childhood science research is a relatively

small field and researchers need the opportunities afforded by the ESERA SIG workshop to discuss research with like-minded researchers.

Schedule

Time	Activity	Notes
Hour 1	Welcome • Presentation 1 - on the status of early years science - panel discussion and answer. • Presentation 2 – Review of the "Current trends in Early Years Science Research" Early Years SIG Workshop (Bordeaux, April 2019)	Invite professors in early childhood science to present 5 minute snapshot of their research Estelle Blanquet and others
Hour 2	• Group discussions of research focuses, possible networks or alliances. Focus on ECR linking to established researchers. • Participants sort into targeted groups related to research interest in nature of science, Kindergarten systems and teachers training, digital technologies in early childhood etc.	Whole cohort discussion led by SIG coordinators. Table groups led by one person. Discussion recorded and fed back to whole group.
Hour 3	• Future directions and contemporary practice. Focus on issues in early childhood such as influencing government policy directions and practice at the ground level	Guest protagonist – presentation Table discussions on strategies to address issues. Information collected

List of literature relevant to the workshop topic and/or format.

This would be very broad ranging, depending on the topics arising from April's workshop. For example, it might include publications from IDoS 2017 – International Dialogue on STEM Education in Berlin. Prior to the workshop, we would compile a list of current readings arising from research of the participants and from recent large research initiatives. See below for a sample of publication which could be drawn upon.

Benson, C. (2008) Young children as discriminating users of products: essential experiences for language development. Middleton and Pavlova (Eds) *Exploring Technology Education: Solutions to issues in a globalised world. Volume 1.*

Campbell, C., Speldewinde, C., Howitt, C. & MacDonald, A. (2018) STEM Practice in the Early Years, *Creative Education Journal Special Edition Preschool Education Research*, January. Online http://www.scirp.org/journal/ce/

Danby, Susan (2017) Technologies, Child-Centred Practice and Listening to Children. In Arnott, Lorna (Ed.) *Digital Technologies and Learning in the Early Years*. SAGE Publications, London, pp. 127-138.

Eshach, H & Fried, M (2005) Should Science be taught in Early Childhood. *Journal of Science Education and Technology*, Vol 14, No 3

Fleer, M., March, S. & Gunstone, D (2006) *Investigations into the engagement of preschool and primary aged children in science, engineering and technology*. Report by Monash University, Department of Science and Training.

Howitt, C. (2015) Planning for teaching science in the early years. Pp171-186, In Campbell, C., Jobling, W. & Howitt, C Eds. *Science in Early Childhood 2nd Ed*. Cambridge University Press, Melbourne, Australia.

MacDonald, A. (2013). Using children's representations to investigate meaning-making in mathematics. *Australasian Journal of Early Childhood*, *38* (2), 65-73

Marginson, S., Tytler, R., Freeman, B., & Roberts, K. (2013). STEM: Country comparisons. Melbourne: The Australian Council of Learned Academies. www.acola.org.au.

McCain, M. N., Mustrad, J. F., & Shanker, S. (2007). *Early years study 2 – putting science into action.* March 2007. Council for Early Childhood Development. Toronto Ontario.

McClure, E. R., Guernsey, L., Clements, D. H., Bales, S. N., Nichols, J., Kendall-Taylor, N., & Levine, M. H. (2017). STEM starts early: Grounding science, technology, engineering, and math education in early childhood. New York: The Joan Ganz Cooney Center at Sesame Workshop.

Milford, T. & Tippett, C. (2015) The design and validation of an early childhood STEM Classroom Observational Protocol. *International Research in Early Childhood Education*, *6*(1), 24-37.

Moomaw, S. (2012). "STEM Begins in the Early Years." School Science & Mathematics 112(2): 57-58.

Nilsson, P. & *Elm*, A. (2017). Capturing and Developing Early Childhood Teachers' Science Pedagogical Content Knowledge Through CoRes. *Journal of Science Teacher Education:* Vol 28, No 4

Patrick, H. Mantzicopoulos, P., & Samarapungavan, A. (2009) Motivation for learning science in Kindergarten: Is there a gender gap and does integrated inquiry and literacy instruction make a difference. *Journal of Research in Science Teaching*, 46(2), 166-191

Pyle, A. (2013). Engaging young children in research through photo elicitation. *Early Child development and Care, 183*(11), 1544-1558. doi: 10.1080/03004430.2012.733944

Ricks, E. D. (2013). Cultivating early STEM learners: An analysis of mastery classroom instructional practices, motivation, and mathematics achievement in young children. US, *ProQuest Information & Learning*. 73.

Sackes, M., Trundle, K., Bell, R. & O'Connell, A. (2011) The Influence of Early Science Experience in Kindergarten on Children's Immediate and Later Science Achievement: Evidence from the Early Childhood Longitudinal Study. *Journal of Research in Science Teaching*, Vol. 48, No. 2 pp 217-235

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I., Taggart, B. (2010) Early Childhood Matters: Evidence from the Effective Provision of Preschool and Primary Education (EPPE) Project. Routledge, 2010

Tippett, C. & Milford, T. M. (2017) Findings from a Pre-kindergarten Classroom: Making the Case for STEM in Early Childhood Education. *Int J of Sci and Math Educ.* 15 (Suppl 1):S67–S86 DOI 10.1007/s10763-017-9812-8

Materials or artefacts needed

Paper, texta pens, electronic displays etc.