Australian Government
Australian Research Council

EI 2018 ENGAGEMENT AND IMPACT

Engagement and Impact 2018

Southern Cross University

SCU13 (SS) - Impact

Overview

Title

(Title of the impact study)

Childhood environmental education and sustainability in early childhood education, schools and communities

Unit of Assessment

13 - Education

Additional FoR codes

(Identify up to two additional two-digit FoRs that relate to the overall content of the impact study.)

05 - Environmental Sciences

Socio-Economic Objective (SEO) Codes

(Choose from the list of two-digit SEO codes that are relevant to the impact study.)

93 - Education and Training
96 - Environment

Australian and New Zealand Standard Industrial Classification (ANZSIC) Codes

(Choose from the list of two-digit ANZSIC codes that are relevant to the impact study.)

80 - Preschool and School Education
81 - Tertiary Education

Keywords

(List up to 10 keywords related to the impact described in Part A.)

Environmental education

Early childhood education and care

Schools

Sustainability

Play

Knowledge

Learning

Teachers

Children

Climate change

Sensitivities

Commercially sensitive

No

Culturally sensitive

No

Sensitivities description

(Please describe any sensitivities in relation to the impact study that need to be considered, including any particular instructions for ARC staff or assessors, or for the impact study to be made publicly available after EI 2018.)

Aboriginal and Torres Strait Islander research flag

(Is this impact study associated with Aboriginal and Torres Strait Islander content?
NOTE - institutions may identify impact studies where the impact, associated research and/or approach to impact relates to Aboriginal and Torres Strait Islander peoples, nations, communities, language, place, culture and

knowledges and/or is undertaken with Aboriginal and Torres Strait Islander peoples, nations, and/or communities.)

No

Science and Research Priorities

(Does this impact study fall within one or more of the Science and Research Priorities?)

Yes

Science and Research Priority	Practical Research Challenge
Environmental change	Options for responding and adapting to the impacts of environmental change on biological systems, urban and rural communities and industry.

Impact

Summary of the impact

(Briefly describe the specific impact in simple, clear English. This will enable the general community to understand the impact of the research.)

Australian preschool and school teachers are required to teach their students about sustainability and encourage positive environmental behaviours. In response, Southern Cross University (SCU) and partners developed a preschool program that integrated learning about sustainability and healthy eating through different types of play. The research was successful in increasing children's environmental knowledge and shifting environmental behaviours. SCU also involved children and young people in writing teaching programs for schools, developing art exhibitions, networking about environmental matters online and taking part in a Climate Change Challenge. SCU wrote books and articles and gave seminars about sustainability teaching programs for teachers and trainee teachers around the world.

Beneficiaries

(List up to 10 beneficiaries related to the impact study)

Children

Parents

Pre-service teachers

Teachers

Teacher educators

Education policy makers

Curriculum developers

Community in general

Countries in which the impact occurred

(Search the list of countries and add as many as relate to the location of the impact)

Australia

Poland

United States of America
Indonesia

Details of the impact

(Provide a narrative that clearly outlines the research impact. The narrative should explain the relationship between the associated research and the impact. It should also identify the contribution the research has made beyond academia, including:
- who or what has benefitted from the results of the research (this should identify relevant research end-users, or beneficiaries from industry, the community, government, wider public etc.)
- the nature or type of impact and how the research made a social, economic, cultural, and/or environmental impact
- the extent of the impact (with specific references to appropriate evidence, such as cost-benefit-analysis, quantity of those affected, reported benefits etc.)
- the dates and time period in which the impact occurred.

NOTE - the narrative must describe only impact that has occurred within the reference period, and must not make aspirational claims.)

Despite the fact that sustainability is one of Australia's three cross-curriculum priorities and central to the Early Years Learning Framework, environmental education remains marginalised in practice. This case describes the impact of three practice-based environmental education projects undertaken by Professor Amy Cutter-Mackenzie (ACM) and collaborators.

From 2010-14 ACM (Monash/SCU from 2012) and Edwards (Monash/ACU) explored the efficacy of open-ended, modelled and purposefully-framed play for environmental education with 16 early childhood teachers and 119 children in Victoria. The resulting play-framework showed each play type to be crucial in supporting young children's learning. The children benefitted from a rich play experience that enhanced knowledge and encouraged sustainable behaviour. By extension, the intervention delivered social and environmental benefits to the community.

From 2014-16 Skouteris, Rutherford (both Deakin), Edwards and ACM undertook a randomised trial at Childhood Management Services preschools (Victoria) to research curricula that integrated learning about healthy eating, active play and sustainability with 300 children-parent dyads and 25 early childhood teachers. They had previously conducted a feasibility study and prepared a pedagogical statement Generating New Knowledge in Early Childhood Education: Aligning Contemporary Health, Wellbeing and Sustainability Issues with Research into Children's Play 2012 which formed the basis of the trial.

While the wait list control group continued their usual practices, intervention teachers attended workshops and used the play-framework and popular culture motifs to develop learning experiences. This practice-based research had immediate impact. Children in the intervention group demonstrated positive environmental behaviours around recycling and healthy lifestyle choices (consuming fewer sugary drinks and eating more vegetables). Parents also benefitted by transfer of new environmental learning into homes.

One in five Australian preschool children is overweight or obese. Early childhood obesity is negatively associated with health, self-esteem and educational outcomes, and overweight children are likely to become overweight adults. While the economic costs of childhood obesity are seen as a future problem, a 2017 study showed that obese preschool children add $17m per year more to the Australian health budget than do children of healthy weight. By facilitating healthy lifestyle choices, this early childhood intervention delivered social and economic benefits to children and Australia as a whole.

Practising and pre-service teachers and teacher educators benefitted from ACM's research. From 2014-16, there were 8751 chapter-downloads of ACM, Edwards, Moore (RMIT) and Boyd's (SCU) Young Children's Play and Environmental Education in Early Childhood Education and 11,513 chapter-downloads of Wattchow (FedU), Jeanes, Alfrey, Brown, O'Connor (all Monash) and ACM's co-edited The Socioecological Educator (in top 25% of Springer books' distribution). Elliott (ACU), Edwards, Davis (QUT) and ACM's Early childhood Australia's Best of Sustainability: Research, Practice and Theory 2013 was widely used, and ACM and Hoepper's chapter Teaching for Sustainability (see refs) was a prescribed text for 47 courses at 19 Australian universities (approximately 4600 sales 2014-16).

ACM also supported ongoing professional development of early childhood teachers by publishing in Eingana (Victorian Association for Environmental Education), Early Childhood Folio (NZ Council for Educational Research)

and Every Child (all 2012).

From 2011-16, ACM delivered professional development seminars to approximately 2000 teachers in four Australian states, and workshops on design and implementation of early childhood environmental education to 300 US and 2000 Polish teachers (2011/2012). She also supported 500 Indonesian pre-service teachers and lecturers in 2013 (ongoing program). An ACM publication has been compulsory reading for approximately 3000 Polish preservice teachers. These publications and presentations benefitted educators, and in turn delivered social and environmental benefits to the community.

ACM's research also impacted education policy. She was a member of Sustainability Cross-curriculum Priority Task Force and her work was cited in the Australian Research Alliance for Children and Youth's A shared early childhood development research agenda: key research gaps 2011.

From 2014-16, ACM undertook a NSW Environmental Trust Project Climate Change and Me (CC+Me). 135 Northern Rivers' children and young people (CYP) aged 9-14 created Past Now Future 2015, a travelling exhibition of collaborative works. Viewed by 10,000 people, the exhibition allowed CYP to 'speak' to their communities about CC.

Using a world-first, child-framed approach, CC+Me mobilised 135 CYP to co-develop two innovative CC curricula (Upper Primary and Lower Secondary). The curricula facilitate deep learning and generate positive environmental behaviour, and were trialled by 30 schools, distributed to all Northern Rivers' schools, and made available online (822 downloads).

The project fostered networking for CYP via the CC+Me website, HangOut CC space for children <12 and the Facebook network Australian Kids for CC. 1500 CYP reported their CC awareness, attitudes and actions using an avatar app 2014-16, and 1200 CYP came together with scientists, artists, writers and community groups for the Climate Change Challenge 2016.

CC+Me empowered CYP as emissaries for CC. Perhaps more importantly, it moved the majority involved from feelings of worry and concern about CC (63% pre-CC+Me) to a position where 61% felt hopeful, informed and positive. The project also networked CYP so they can continue to voice and action their CC concerns. It has delivered significant social and environmental benefits and is a model for other such community initiatives.

Associated research

(Briefly describe the research that led to the impact presented for the UoA. The research must meet the definition of research in Section 1.9 of the EI 2018 Submission Guidelines. The description should include details of:
- what was researched
- when the research occurred
- who conducted the research and what is the association with the institution)

2010-14 Discovery (1st such ARC-funded early childhood project) Edwards (Monash)/Cutter-Mackenzie (CM) (Monash/SCU 2012 - 50% contribution): 16 educators (Vic) developed 3 play-based environmental learning experiences (open-ended/modelled/purposively-framed play) for 119 children – found all play-types equally valuable, a quantum leap which overturned dominance of open-ended play paradigm.

2014-17 ARC Discovery Skouteris/Rutherford (both Deakin)/Edwards (ACU)/CM (SCU 25% contribution): Used popular culture motifs to examine intersect of consumption/health/environment in play-based pedagogy. 25 educators /300 preschool children in randomised trial to research interventions that integrated children's learning about healthy eating/active play and sustainability consequences of their food/toy selections – identified topics associated with obesity prevention/sustainability awareness for curriculum.

2014-16 NSW Environmental Trust Project Climate Change and Me (CC+Me) CM/Roche/Rousell (SCU): Engaged with 135 children/young people (CYP) aged 9-14 from 8 schools in Northern Rivers NSW to develop regionally-relevant climate change curricula for primary/secondary schools (1st such curricula developed world-wide using child-framed approach); Worked with CYP to curate exhibition of their collaborative works; Established online CC+Me Challenge to survey CYP's awareness/attitudes/actions; Engaged 1200 CYP and climate scientists/artists/writers/community groups in CC Challenge Conference.

FoR of associated research

(Up to three two-digit FoRs that best describe the associated research)

13 - Education
05 - Environmental Sciences

References (up to 10 references, 350 characters per reference)

(This section should include a list of up to 10 of the most relevant research outputs associated with the impact)

Skouteris, H., Rutherford, L., Edwards, S. and Cutter-Mackenzie, A. (2012) Generating New Knowledge in Early Childhood Education: Aligning Contemporary Health, Wellbeing and Sustainability Issues with Research into Children's Play. Melbourne: Deakin University.

Elliott, S., Davis, J., Edwards, S. and Cutter-Mackenzie, A. (2013) Early Childhood Australia's Best of Sustainability: Research, Practice and Theory. Melbourne: Early Childhood Australia.

Barratt Hacking, E., Cutter-Mackenzie, A. and Barratt, R. (2013) Children as Active Researchers: The Potential of Environmental Education Research Involving Children. Pp 438-458. In B. Stevenson, A. Wals, M. Brody & J. Dillon (Eds), The Handbook of Research on Environmental Education. Washington: American Educational Research Association.

Cutter-Mackenzie, A. and Edwards, S. (2013) Toward a model for early childhood environmental education: Foregrounding, developing, and connecting knowledge through play-based learning. Journal of Environmental Education. 44(3) 195-213.

Edwards, S., Skouteris, H., Rutherford, L. and Cutter-Mackenzie, A. (2013) "It's all about Ben10™"-Children's Play, Health and Sustainability Decisions in the Early Years. Early Child Development and Care. 183(2) 280-293.

Wattchow, B., Jeanes, R., Alfrey, L., Brown, T., Cutter-Mackenzie, A. and O'Connor, J. (2014) The Socioecological Educator: Building Active, Healthy and Sustainable Communities. Netherlands: Springer.

Cutter-Mackenzie, A., Edwards, S., Moore, D. and Boyd, W. (2014) Young Children's Play and Early Childhood Environmental Education. Dordrecht: Springer.

Cutter-Mackenzie, A. and Hoepper, B. (2014) Teaching for Sustainability. Pp 390-418. In R. Gilbert and B. Hoepper (Eds), Teaching Humanities and Social Sciences: History, Geography, Economics and Citizenship in the Australian Curriculum (5th ed). Melbourne: Cengage.

Cutter-Mackenzie, A., Edwards, S. and Widdop Quinton, H. (2015) Child-Framed Video Research Methodologies: Issues, Possibilities and Challenges for Researching with Children. Children's Geographies. 13(3) 343-356.

Edwards, S., Skouteris, H., Cutter-Mackenzie, A., Rutherford, L., O'Connor, A., Mantilla, A., Morris, H. and Elliot, S. (2016) Young children learning about wellbeing and environmental education in the early years: a funds of knowledge approach. Early Years: Journal of International Research & Development. (36)1 33-50.

Additional impact indicator information

Additional impact indicator information

(Provide information about any indicators not captured above that are relevant to the impact study, for example return on investment, jobs created, improvements in quality of life years (QALYs). Additional indicators should be quantitative in nature and include:
- name of indicator (100 characters)
- data for indicator (200 characters)
- brief description of indicator and how it is calculated (300 characters).)