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The Effectiveness of a Community-Based Playgroup in Inspiring Positive Changes in the Environmental Attitudes and Behaviours of Children and their Parents: A Qualitative Case Study

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Abstract

The ideal period for implementing environmental education or education for sustainability is during the early childhood years. The educational context of playgroups can be a platform for both children and their parents to learn together and together engage in early childhood education for sustainability (ECEfS), however there is a paucity of literature examining ECEfS within Australian playgroup contexts. The Little Explorers Playgroup (LEP) is a facilitated playgroup located in a sustainable living centre in Sydney, Australia, and provides opportunities for children and their parents to engage in ECEfS. The study purpose was to evaluate the effect of the LEP on the participating children and parents' environmental attitudes and behaviours. This qualitative study was designed as a single critical case study employing semi-structured telephone interviews conducted with twenty-three participants, including three LEP playgroup facilitators and 20 parents. The data generated by the interviews was analysed thematically and the findings indicated that the LEP empowered and positively transformed both the children and parents' environmental attitudes and behaviours. This was evident through the children and parents' adoption of more environmentally responsible attitudes and behaviours. The findings demonstrate that playgroups may be an untapped opportunity for facilitating community change towards sustainable living.

Keywords: critical pedagogy; early childhood; empowerment; environmental education; playgroups

Introduction

Education is often described as an *antidote* to the environmental crisis facing the world (Davis, 2014). Early childhood is recognised as an ideal time for implementing environmental education, or more specifically, Early Childhood Education for Sustainability (ECEfS) (Caiman & Lundegård, 2014; Davis, 2010; Dymont et al., 2014). Children can engage with early childhood education both formally, in Early Childhood Education and Care (ECEC) services, or informally in playgroups. Playgroups provide a platform for children and parents to learn together. However, there is a paucity of research and literature that considers the role of ECEfS in shaping the environmental attitudes and behaviours of children and parents in playgroup settings. In this paper, we report on the findings from a study conducted with the Little Explorers Playgroup (LEP), a facilitated

playgroup held weekly at an outer metropolitan centre for sustainable living in New South Wales, Australia. The explicit focus of the LEP in this location was promoting sustainability and environmental education. In the current study, we set out to identify the effectiveness of the LEP in empowering and transforming environmental attitudes and behaviours of children and parents. The notions of “empowerment” and “transformation,” derived from critical pedagogy (Ferreira, 2013; Giroux, 2003; Horkheimer, 1982), informed the theoretical framework for this study.

Literature review

The following section provides a snapshot of the role of playgroups in the Australian educational context and in the global context of the global environmental crisis. Key themes emerging from the literature will be explored: the global environmental crisis and the role of early childhood education; the role of playgroups in education for sustainability; and early childhood education for sustainability and critical pedagogy.

The global environmental crisis and the role of early childhood education

A plethora of environmental, social, and economic issues are challenging the health of our planet and its occupants (Caiman & Lundegård, 2014; Davis, 2010; Jickling, Blenkinsop, Morse & Jensen, 2018). Children and future generations are faced with a diminished quality of life compared with adults living today (Davis, 2010; Dymont et al., 2014; Hedefalk, Almqvist & Östman, 2015). The present poor state of the planet poses a significant risk to all aspects of children’s current and future development, health, and wellbeing (Clark et al., 2020; Currie & Deschenes, 2016), as they are left to carry the burden of the decisions made by preceding generations. To potentially remedy such intergenerational inequities, education can play an important role in empowering children with a sense of hope and equipping them with the skills to actively pave the way to more sustainable futures (Caiman & Lundegård, 2014; Davis, 2014; Dymont et al., 2014; Hedefalk et al., 2015; Jickling et al., 2018; UNESCO, 2009). In Australia, as across the globe, Education for Sustainability (EfS) is a component of early years, primary and secondary school curricula.

The first five years of life is an appropriate time to immerse children in EfS (Davis, 2010; Dymont et al., 2014), as pro-environmental attitudes and actions can be established from this early age (Elliott McCrea, Newsome, & Gual, 2016; Ernst & Tornabene, 2012). Using collaborative, critically reflective, participatory, problem-based, systemic, and experiential approaches, EfS can encourage children to view sustainability as encompassing environmental, social, and economic dimensions (Davis, 2010; Elliott, 2014; Hedefalk et al., 2015). Furthermore, EfS offers children opportunities to make early positive environmental associations — such as engaging in natural environments — which support them to develop an “Ecological identity,” or in other words, an understanding of where they are positioned within local and global ecosystems (Humphreys & Blenkinsop, 2018; Taylor & Pacini-Ketchabaw, 2015). Moreover, Madden and Liang (2017) assert children who engage in EfS programmes that expose them to natural environments are better equipped with the tools to discuss complex nature concepts (Madden & Liang, 2017). Significantly, EfS programmes can place children in “good stead concerning their future actions for sustainability” (Boyd, 2016, p. 30) and equip them with the means to combat the environmental crisis and its negative impacts (Clark et al., 2020; Ernst & Tornabene, 2012).

EfS has become strongly embedded in the early years sector in Australia since the 1990s when state based professional ECEfS networks were first established. In addition, Australian publications and research have increasingly supported this developing field (Davis, 2010; Elliott, 2014; Pollock, 2014). Central to these ECEfS initiatives is the belief that early years education should provide children with participatory, transformative and empowering experiences around sustainability issues and topics (Davis, 2014). The Early Years Learning Framework (EYLF), which is integral to Australia’s National Quality Framework (NQF), places

some emphasis on promoting ECEfS concepts within ECEC services, such as children being socially responsible and connected to the natural world (Department of Education, Employment and Workplace Relations [DEEWR], 2009). ECEfS philosophies align with those of prominent international and local organisations and associations. For example, The United Nations (UN) Convention of the Rights of the Child (UNICEF, 1989) states that early childhood educators need to foster children's participation in education that respects the natural world. Similarly, Australia's peak body for early childhood educators, Early Childhood Australia (ECA), has included in its Code of Ethics the requirement to foster children's understanding that they are global citizens who have collective obligations to the environment and humanity (ECA, 2019). Correspondingly, the Australian Children's Education and Care Quality Authority (ACECQA) maintains that ECEC services need to include ECEfS concepts within their settings (Pollock, Warren & Andersen, 2017), including the requirement that services "support children to become environmentally responsible" (ACECQA, 2018, p. 90). Thus, the global environmental crisis and contemporary research and policy offer a compelling case for the role of early childhood education as foundational to sustainable futures for all.

The role of playgroups in education for sustainability

In Australia, playgroups are organised gatherings, where family members (usually parents/carers) and their children, aged between birth and five years, attend for the purpose of play and socialisation in supportive and safe environments (Dadich & Spooner, 2008; Hancock et al., 2012). These same playgroups are increasingly being encouraged to engage in EfS. For example, Playgroup Australia, the national representative body for playgroup organisations in Australia, has created Sustainability Month, during which participating playgroups are encouraged to focus on activities that build their children's care and respect for the environment. Crucially, Playgroup Australia's focus is not just on involving children in the education process, but also family members and carers. In 2021, a "Play Kit" was provided to member playgroups with tips about how to involve children and their families in sustainable practices in their homes and community settings (Playgroup Australia, 2021). In facilitated playgroups, unlike formal ECEC contexts, parents/caregivers are present for the duration of the play sessions, which enables opportunities for them to converse and build relationships with the playgroup facilitators. These relationships are significant in terms of ECEfS, as parents/caregivers have "the most powerful influence on the development of a child" (McFarland-Piazza, Lord, Smith & Downey, 2012, p. 35). Such exchanges between parents/caregivers and facilitators could aid in reinforcing what is shared in the playgroups and strengthen the ECEfS knowledge, attitudes, behaviours and skills of parents/caregivers and their children outside of the playgroup context (Borg, Winberg & Vinterek, 2017; Madden & Liang, 2017; Pollock, Warren & Andersen, 2017). Despite clear indications of the intergenerational influence of parents on the attitudes and behaviours of their children, and the potential of playgroups to facilitate such relationships, playgroups remain a generally under researched area, with minimal evidence regarding their capacity to contribute to the development and learning of young children (Commerford & Robinson, 2017; Gregory, Sincovich, Harman-Smith & Brinkman, 2017).

Early childhood education for sustainability and critical pedagogy

Critical pedagogy was chosen to inform the current study as it provides a highly relevant lens to contextualise the Little Explorers Playgroup (LEP) and analyse the study findings. Critical pedagogy is derived from critical theory. Critical theorists argue that individuals are subjugated by hegemonic forces and that these individuals should be transformed and empowered to overcome the forces that enslave them (Horkheimer, 1982). Critical pedagogy is underpinned by the idea that education should empower children — who have little decision-making power — and transform them into active decision-makers (McLaren, 2003). In other words, critical pedagogists

believe that adults should share their decision-making power with children, and that researchers should seek to validate the lived experiences of children, allowing them to speak about the happenings in their lives (Peterson, 2003). By doing so, children will be transformed into more critical and active citizens. Significantly, a gap exists in ECEfS literature around the potential of facilitated playgroups to empower and transform children's environmental attitudes and actions and subsequently the attitudes of their parents/caregivers.

Although not a formal educational setting, the key tenets which undergird the LEP's programme and the strategies they employ strongly overlap with those of ECEfS and critical pedagogy. Both ECEfS and critical pedagogy state that education should empower children to learn about and act on environmental issues, and in doing so, children are supported to positively transform themselves and the world around them (Birdsall, 2010; Davis, 2014). Central to ECEfS and critical pedagogy are the notions of empowerment and transformation, where children are educated in such a way that they share in decision-making power and transform themselves from simply students into co-learners and environmental actors with their teachers. This model of education departs from the banking model of education where teachers simply deposit knowledge into children (Freire, 2003). Particularly in the field of EfS, it is vitally important that teachers invite students to identify environmental problems that interest them (Jickling, 1991) so that they may feel motivated or "empowered" to act and change their way of "being in the world" (Pollock, 2014, p. 9). Once again, empowerment represents adults passing decision-making power over to children so that children, through their heightened interest in environmental issues, can in turn share their ideas with family members and other adults. Through the act of empowerment, adults are indeed transforming children. In other words, education should have, as its overarching goal, the transformation of children into environmentally sustainable thinkers and actors (Rieckmann, 2018), capable of responding to the global environmental challenges facing them (Jickling et al., 2018). Crucially, critical theorists also assert that education can empower children to become environmental actors, capable of influencing the environmental attitudes and behaviours of adults (Andersen, 2016). Studies have been conducted on intergenerational influences in primary and secondary school settings (Andersen, 2016), but there has been little, or no research conducted on the effect of ECEfS programmes, in formal or informal early childhood settings — on the environmental attitudes and behaviours of any attending parents/caregivers.

Pragmatically, ECEfS and critical pedagogy also promote the importance of including multiple stakeholders — such as parents/carers — in the learning process and providing children with opportunities to learn about and take action on environmental issues. Adults can participate with children to promote the transformation of children into action competent change agents, capable of making decisions about important social issues (Reesa, 2009). Supporting children to become capable of taking action on the challenges facing them, requires opportunities to learn alongside multiple stakeholders, including their parents and carers (Pollock, 2014; Elliott et al., 2016; Robinson & Vaealiki, 2010). Furthermore, action competence is enhanced when children are provided with authentic opportunities to engage in democratic processes, alongside adults (Short, 2010). Parents and carers can act as empowering agents supporting their child to attain a particular "ideal vision or end state" (Haque, 2007, p. 93), such as being motivated and capable of taking action on local environmental problems (Jensen, 2002; Prabawa-Sear & Baudains, 2011). Education for sustainability is on the front line in preparing humanity to combat climate change. A common tenet of ECEfS and critical pedagogy is the desire to create participatory, transformative and empowering experiences that provide children with opportunities to bring about environmental attitudinal and behavioural change in their centres, homes and communities generally. Yet, despite these commonalities there is a paucity of research focused on the capacity for playgroups to empower children to become environmental change agents. This paper addresses some of these research and methodological gaps by reporting here on LEP study findings using a critical pedagogy lens.

Study design

The research question guiding the current study was, “What environmental attitudes and behaviours did the LEP inspire in the participating children and parents?” The study goal was to identify any changes in the environmental attitudes and behaviours of the participating LEP children and their parents due to their LEP experience.

A qualitative study approach was adopted, as qualitative research aims to create an informed perception of social phenomena occurring in the natural context focusing on the individuals’ experiences (Kervin, Vialle, Howard, Herrington & Okely, 2015). A critical case study design was selected because it enables the social phenomenon of the participants’ engagement with the LEP and its facilitators to be most effectively unearthed and understood (Kervin et al., 2015). Additionally, the notion of a “critical” case study incorporates a critical pedagogy theoretical perspective, specifically focusing on notions of empowerment and transformation in this study.

Interview method, participants, and setting

The Little Explorers Playgroup (LEP) was led by staff employed in an outer metropolitan sustainable living community centre whose vision was to empower participating parents, carers and children to live more sustainably. The LEP was implemented by three facilitators and attended by multiple parents/carers and their children, aged between birth and five years for 2-hour sessions, once a week for ten weeks. A key strategy employed by the facilitators each week was to provide the children with explicit teaching about an environmental topic such as recycling, followed by a consolidation activity that involved arts and craft, garden-based experiences, as well as free exploration in the centre’s outdoor natural environment. While parents could bring their children from birth to five years of age, the target age for the programme was for preschoolers, aged between three and five years.

Parents and carers who had regularly attended the playgroup for at least one term (2 hours per week for 10 weeks) were invited to participate in the research. It was anticipated that they possessed knowledge about the programme and could potentially provide valuable information regarding the LEP and its’ influence on them and their children. While including children’s voices would have provided valuable data, it was determined this was beyond a realistic scope for an honours study. Twenty parents participated in the study, providing personal insights into their LEP experience.

Data collection

For this study, interviews were the most appropriate method of data collection as interviews invite participants to share their perspectives about particular programmes, situations and ideas (Boyce & Neale, 2006). The interviews were semi-structured with open-ended questions. Open-ended questions were intentionally selected as they enable participants to more readily express their perspectives as well as support the researcher in ascertaining a better understanding of “what people say or do in their life setting” (Creswell, 2003, p. 8). This was considered extremely useful for responding to the study research question, as detailed personal insights were needed into how the parents and their children may have adopted environmental actions in their home contexts from the LEP engagement/experience. Questions were posed about the length of time the parents had attended the playgroup, the parts of the programme they believed their child seemed to enjoy the most or least and parent perspectives about the perceived influence of the LEP on their child and themselves in relation to attitudinal and behavioural change.

All study participants were individually interviewed for approximately 15 minutes via phone call. With the consent of the participants, the phone interviews were audio recorded which aided the researcher in transcribing the audio recordings verbatim. The researcher ensured the highest level of accuracy in transcribing the data by undertaking two processes, firstly listening to the

audio recordings several times when transcribing and secondly, the completed transcribed data was re-checked against the audio recordings. These are vital components of a robust transcription process (Flick, 2009).

Interview analysis

A thematic analysis was adopted to analyse the study data, a technique where the data are organised into meaningful and manageable codes, categories, and themes (Peel, 2020). For this study, following data transcription, each of the transcribed interviews were then reorganised with each of the participant's responses clustered under the applicable interview question. Once achieved, the findings were synthesised via the process of coding, then the coded responses were clustered together under a heading that represented each code, which ultimately led to various emergent themes. Through examining the emergent themes, detailed insights were gained into any perceived changes in parent/carer or child attitudes and behaviours.

Findings

Analysis of the data demonstrated that the LEP inspired positive changes in the environmental attitudes and behaviours around sustainable life choices of the participating children and their parents/carers. The following section provides details on those changes and in addition, the commonalities and differences between the changes brought about among the children and the adults.

Positive changes in environmental attitudes

Overall, the findings demonstrated that the LEP had a positive influence on the environmental attitudes of the child and parent participants. The changes in environmental attitudes centred around several key areas: A greater love and respect for nature and a deeper understanding of the relationship between human actions in and around the family home and the health of the environment.

In terms of the positive influence of the LEP on the children's environmental attitudes, the children showed a positive change in levels of "love of nature, respect for animals, insects and plants" (Educator A). Another of the LEP facilitators reported that the children seemed to be "more in touch with the world around them" and "inquisitive" about the natural world around them (Educator B). While participating in the LEP, many of the children demonstrated a sense of interest in and respect for nature. Feedback from parents was similar, with several indicating that their children seemed to "enjoy nature more" and seemed more comfortable in simply getting "out there" into nature (Parent C). Other assessments by parents were in the same vein, explaining that as a result of participating in the LEP, their children appeared to have a more inquisitive and caring attitude towards nature, including animals and bugs. One of the parents spoke of the new respect that their child had developed for bees, after learning about the importance of bees in an explicit LEP teaching session. She said, "*they know that bees aren't scary they sort of think that bees are good so if they see a bee they're happy like they might have been scared before or tried to kill it before like whatever kids do. They — LEP — added that level of appreciation.*" (Parent S).

While the LEP sparked positive levels of respect and love for nature among many of the children, the findings also showed that the LEP fostered a deeper understanding of the children's relationship between home-based behaviours and a healthier environment. The children's deeper understanding appeared to be built on what they learnt about sustainable practices such as recycling during their time at the LEP. In terms of recycling, many of the parents mentioned that their children were more aware of — and interested in — recycling. Among the twelve parents

who cited a positive improvement in their children's attitudes and behaviours towards waste management, eight outlined that this was evident through their children's ability to recognise where household waste should be disposed. One of the parents stated that her son was keen to do the right thing when recycling: *"he wants to make sure rubbish is placed in the correct bins"* and *"asks if certain items go in the red or yellow bin."* Another parent was pleasantly surprised by her son's interest in, and knowledge about recycling and directly attributed this to the LEP. She recollected what her son had told her when they were discussing recycling at home: *"I know that from Little Explorers. I know what goes in what bin!"* (Parent F). The findings also revealed that the children had experienced upcycling at the LEP and some adopted similar attitudes towards their toys in their family homes. One parent explained that she planned to dispose of some household items to create more space at home, however, her child intervened, *"No we can reuse this, you have to keep it and put it here in my craft pile"*.

As with the children, the LEP also positively influenced the parents' environmental attitudes. The change in their environmental attitudes centred around a deeper appreciation of the relationship between human behaviours in and around the family home and the health of the environment. A key finding to emerge from the data was that the parents' heightened awareness of the importance of pro-environmental behaviour in the family home. As with the children, the parents highlighted recycling, as demonstrated by Parent H: *"I had very little idea of what you could recycle. It (LEP) gave me a better understanding."* Another parent said, *"I definitely recycle more. Our red bin is practically empty every week."* For some parents, involvement in the LEP provided an extension of their existing environmental attitudes: *"It's just gone in a little bit more depth, like more knowledge than what I walked in previously before . . . I guess going to playgroup reinforces all those things that we already talk about"* (Parent D). Some parents reported more awareness of the importance of reducing their consumption of non-renewable resources, such as water and electricity. One of the parents spoke of becoming more knowledgeable about the ways to foster renewable energy in her home via installing solar panels, while another mentioned more awareness around pollutants, specifically pesticides and weed killers, and the potential for these to damage the environment. Finally, an important finding was that the positive changes among the parents' was linked to their LEP learning alongside their children. Parent H) described how by "osmosis" parents participating in the LEP were listening and learning *"an awful lot"* about sustainability issues and practices from the LEP facilitators.

Positive changes in environmental behaviours

The findings demonstrated that participation in the LEP positively impacted the environmental behaviours of children and their parents within the family home. Children were more aware of the role of and actively engaged in recycling. Some children grew vegetables in the family home and others were emboldened to adopt leadership roles in their family. Participating parents spoke of increased levels of commitment to, and the enactment of, environmental initiatives in the family home following the LEP.

The children's enhanced respect and love for nature was evident in a heightened interest about growing vegetables. Four of the parents believed that through engagement in the LEP's vegetable garden activities, their children had become more interested in growing vegetables at home. One participant described her son's newfound interest in gardening:

"he's a lot more interested in it, before he didn't kind of really understand but now he's doing it and watering the plants and kind of seeing that these are the seeds we planted and then we're going to water them and they're going to grow and then we can actually eat the food" (Parent O).

Several parents reported that their children actively transferred their knowledge and commitment to sustainable actions from the LEP into their family homes. For example, they engaged their family members in conversations about the importance of commencing or upholding some of the environmental practices learnt in the LEP. As one LEP educator stated, *“They are wanting to take that knowledge back home and they are wanting to actually help grow the plants and sow seeds and seedlings and all of the processes with that”* (Educator A). Some parents began new environmental initiatives because of their children’s express wishes. For example, one parent explained that they would never have REDcycled their plastic bags if it wasn’t for her son asking her to do so. She explained that she now goes out of her way to REDcycle, *“I do my normal recycling, but that was something extra and above that I would never have done if it wasn’t for him asking to do it”* (Parent G).

Children not only initiated conversations about the importance of environmental initiatives, such as recycling, but also kept a keen watch over their parents to ensure that the practices were maintained. Parent (Parent A) explained how her children constantly asked for more sustainability knowledge and practices, stating *“they are often the ones nagging to do this or that or watch a David Attenborough show because they are really keen on a particular animal or rainforest or something like that they have learnt here.”* Such “nagging” by children was reported in the home context according to Educator A, who argued that the children’s oversight played a part in influencing the parents’ actions (Educator A). The same educator also felt that through children’s continual and long-term engagement with the LEP it had pushed parents into thinking *“oh okay, better not do that then because they are watching.”* Similarly, another of the LEP facilitators (Facilitator B) explained that the children often “called out” their parents’ actions that did not align with what the LEP facilitators had told them in the LEP sessions: *“Facilitator A said you can’t do it that way or Facilitator B said you can’t do it that way.”* Furthermore, one LEP facilitator (Facilitator C) explained an experience in which her granddaughter (who had attended LEP), saw her father placing the wrong items in the bin and said to him, *‘no, you put that in this bin Daddy’.*

Similarly, the study revealed that the LEP had a positive change on the environmental behaviours of most of the parents, particularly in terms of either inspiring them to take up or recommit to environmental initiatives in their family homes. Most of the parents reported that as a direct result of participating in the LEP with their children they implemented more environmentally responsible initiatives in their family homes. The actions of the parents centred around everyday activities such as composting and waste management. One of the LEP facilitators explained that some parents — after participating in the LEP — had *“started up a worm farm . . . composting at home . . . and stopped using bin liners”* (Educator B).

Several parents stated how they had adopted composting as well as actively attempted to reduce their food waste and plastic consumption due to LEP participation. This was illustrated by Parent L, who said, *“instead of asking the council for a bigger general waste bin I decided to start composting.”* Parent E stated, *“I plan out things, like all my meals and everything so we’re not wasting as much,”* while Parent Q noted that her *“usage of the soft plastics has reduced dramatically. I don’t buy the single packaged snacks for school anymore.”*

Parents also demonstrated a greater commitment to growing their own foods, because of their engagement with the LEP. Specifically, this translated to parents either creating or extending upon an existing veggie patch in their home contexts with the knowledge from the LEP. Parent H explained the influence of participating in the LEP thus: *“it encouraged me to start my veggie patch again.”* Parent N, likewise stated, *“We’ve got a veggie patch at home but a lot of things about what you can actually put on there and things like that, it’s definitely helped there.”* One parent even outlined her hesitation and negative attitude towards growing her own food, prior to joining the LEP: *“I’m not very good at growing things. When I’ve tried to, I’ve failed,”* however through the LEP, *“I’ve sort of become more, yeah I’ve learnt sort of a back to basics things that I somehow lost because of being in such an urban way”* (Parent S).

Discussion and conclusion

In summary, the findings demonstrate that the LEP inspired more environmentally responsible attitudes and behaviours among the participating children and parents/carers. Both the children and their parents/carers adopted attitudes and behaviours to inform home-based actions for living more sustainably. Attitudinally, the participants were more aware, at the completion of the LEP, of the importance of caring for the environment, through a greater respect and appreciation of nature and animals. In terms of making sustainable life choices, the LEP inspired in the children not only a willingness to adopt more sustainable practices in their family homes, but also to take up intergenerational leadership roles in their family homes. The findings are now discussed in terms of the critical pedagogy lens of empowerment and transformation.

The LEP had a transformative and empowering effect on the participating children, particularly regarding their environmental leadership capacities. This is highly significant, because despite the findings originating from a single centre with local focus, the LEP exemplifies the ability of facilitated playgroups in Australia to not only meet both global and national environmental aspirations for children, but to also empower and transform children to be intergenerational environmental leaders. While the findings from the current study relate to everyday household environmental actions, they are discussion-worthy in terms of the ability of playgroups to transform the participating children from learners to leaders, in particular those that are facilitated.

The findings revealed that while the three facilitators in the community-based playgroup positively influenced the environmental attitudes and behaviours of children and their parents/carers, it was the children who were most notably transformed. In the face of a global environmental catastrophe (Caiman & Lundegård, 2014; Davis, 2010; Jickling et al., 2018), adults are being challenged to empower children with knowledge, hope and skills. This empowerment will assist children to navigate and mitigate the environmental challenges that will significantly affect their lives (Caiman & Lundegård, 2014; Davis, 2014; Dymont et al., 2014; Hedefalk et al., 2015; Jickling et al., 2018; UNESCO, 2009). The parents/carers perceived that the children were indeed inspired by the LEP session experiences to take action. The LEP involved taking children outside of the classroom enabling positive environmental associations with nature (Humphreys & Blenkinsop, 2018; Taylor & Pacini-Ketchabaw, 2015). In particular, the LEP achieved a foundational goal from the UN Convention of the Rights of the Child by helping the children to participate in education that respects the natural world (Clarke, 2017; Madden & Liang, 2017). Likewise, the LEP demonstrated how effective young children can be with the knowledge and skills to take on environmental problems (Clark et al., 2020; Ernst & Tornabene, 2012). A clear example was the growth in the participating children's knowledge around pro-environmental household activities, such as recycling and vegetable gardening.

Another significant finding was the positive influence that the LEP's co-learning philosophy had on the environmental attitudes and behaviours of the participants. Although, this paper has not focused on the pedagogical approaches implemented in the LEP, the findings demonstrated that by allowing parents and children to learn side by side, both parties' environmental attitudes and behaviours were positively transformed. Importantly, the findings add further nuance to other studies claiming that across environmental education and early childhood, parents/carers and facilitators have a most powerful influence over children's learning and development (McFarland-Paizza et al., 2012). There is much potential for intergenerational influence around children's environmental attitudes and behaviours, particularly in facilitated playgroups, as they learn side by side (Commerford & Robinson, 2017; Gregory, Sincovich, Harman-Smith & Brinkman, 2017; Pollock, 2014; Elliott et al., 2016; Robinson & Veaeliki, 2010). What is most striking, however, is that while the adults, did participate in the transformation of the children into agents of change during the LEP sessions (Reesa, 2009; Zhao, 2011), the LEP also reversed the traditional model of intergenerational influence with the children influencing the adults to act in environmentally

responsible ways in their family homes. Learning alongside their parents in the LEP provided some of the children with the motivation to transform their home worlds (Birdsall, 2010; Davis, 2014) by encouraging their parents to uphold and improve such practices as recycling and growing food. In addition, the LEP did not simply deposit knowledge with the children (Freire, 2003), but instead empowered the children to change their ways of being in the world (Pollock, 2014). Prior to engagement with the LEP, the children were described by parents/carers as not interested in pro-environmental behaviours such as recycling, however post LEP the children not only became more interested, but also began campaigning on behalf of the environment. Previous studies around the notion of children leading adults towards more environmentally responsible attitudes and behaviours has been primarily conducted in primary and secondary school settings (Andersen, 2016). The findings of the current study shine light on the ability of facilitated playgroups to empower and transform children to be intergenerational environmental change agents.

In Australia, like the rest of the world, environmental education is seen as a means of mitigating the environmental problems facing humankind. In the realm of formal early childhood education services and informal playgroups, educators and facilitators are being pressed to include ECEfS concepts within their settings (Pollock, Warren & Andersen, 2017). The overall intent is to empower both children and their family members to develop more sustainable practices in their family homes and communities (Playgroup Australia, 2021). The current study, demonstrates that young children when provided with opportunities to participate with their parents/carers in playgroups, have the capacity to lead adults to think and live in more environmentally responsible ways for sustainable futures.

Limitations

While the participants provided rich data on the influence of the LEP on their attitudes and behaviours, the current study is limited in size and scope, focusing on one playgroup in New South Wales, Australia. In addition, the children's voice was captured by the parents in this study. This was a limitation, as having the opportunity to observe the children and speak with them directly would have provided deeper insights into the influence of the LEP on their environmental behaviours and attitudes. Furthermore, this paper focuses only on findings that relate to the influence of the playgroup on the participants' environmental attitudes and behaviours. The authors have not focused — in this paper — on the teaching and learning strategies/pedagogies that were most effective in bringing about these changes.

Final recommendations

More studies need to be conducted into the effectiveness of facilitated playgroups and ECEC services in empowering children and their parents/carers to become more environmentally responsible. It is vital that further research, in particular, is conducted into the ability of playgroups and ECEC services to transform participating children into environmental leaders in their family homes. It is also a strong recommendation to include the voices of children, and observations of their practices to empower children as research participants. Therefore, the findings of this study can be deemed useful to other research partnerships between universities and ECEC services and playgroup contexts that prioritise sustainability like MCSL.

Furthermore, it is imperative that there is a national policy and system change, underpinned by suitable resourcing, to support all playgroups to introduce Education for Sustainability into their programmes. Through such change, more programmes such as LEP will become vehicles for community environmental education engagement, transformation, and empowerment. There is also scope for traditional Environmental Education centres and facilities like zoos to offer playgroups that engage children and their parents/carers.

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