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Article abstract

Environmental education looks to motivate and empower positive environmental actions that respect the complexity of natural systems. It follows that related educational research takes up a multiplicity of voices, and possibilities for exploring ecological curriculum and practice. Participatory action research (PAR) does this as it brings together theory, inquiry, and social justice, and PAR that includes children as researchers is transformative for both young researchers and the community. There is, however, limited research on the experiences of young learners in PAR in environmental education. This paper shares the reflections of the Eco Research Organization, a group of grade six researchers, and Susan Jagger, their adult co-researcher, on their engagement in PAR in a longitudinal study of their school garden and nature in their community.

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"IT'S FROM A FRESH PERSPECTIVE": CHILDREN'S REFLECTIONS ON PARTICIPATION IN ECOLOGICAL RESEARCH AND ACTION

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ABSTRACT

Environmental education looks to motivate and empower positive environmental actions that respect the complexity of natural systems. It follows that related educational research takes up a multiplicity of voices, and possibilities for exploring ecological curriculum and practice. Participatory action research (PAR) does this as it brings together theory, inquiry, and social justice, and PAR that includes children as researchers is transformative for both young researchers and the community. There is, however, limited research on the experiences of young learners in PAR in environmental education. This paper shares the reflections of the Eco Research Organization, a group of grade six researchers, and Susan Jagger, their adult co-researcher, on their engagement in PAR in a longitudinal study of their school garden and nature in their community.

KEY WORDS: Action research; Children's participation, Ecological curriculum and research; Environmental education; School gardens

INTRODUCTION

Historically the goal of environmental education has been to increase environmental knowledge leading to positive environmental actions (see, for example, Hungerford & Volk, 1990; Stapp, 1969). While admirable, this intention takes up a firm anthropocentric view of the environment and environmental systems. More contemporary aims of environmental education reflect the complexity of environments and the multidisciplinarity of environmental issues and responds to their inherent ecological, social, physical, economic, and political realms (Le Grange, 2009). It follows that environmental education research takes up methodologies and methods that embrace a multiplicity of disciplines, voices, and

possibilities for exploring ecological curriculum, pedagogy, and practice. One such approach that is well suited to environmental education is participatory action research (PAR). PAR brings together theory, inquiry, and social justice, aligning with the goals of environmental education (Mordock & Krasny, 2001). With notable exceptions (see, for example, Barratt & Barratt Hacking, 2008), there has been limited study on the experiences of young learners in PAR related to the environment and environmental education. This paper shares the reflections of the Eco Research Organization, a group of grade six researchers, and Susan Jagger, their adult co-researcher, on their engagement in PAR in a longitudinal study[1] of ecological curriculum and research related to their school garden and nature in their community.

RECASTING ACTORS IN RESEARCH: PARTICIPATORY RESEARCH WITH CHILDREN

Action research projects in education are typically undertaken with the goal of improving curriculum and instruction. Studies are conducted by those within the educational setting, most often teachers, and consist of gathering information about how said educational setting operates and, from those findings, enhancing teaching and learning within that context. A significant component of the action research process is the educator-researcher's active reflection on the research. This reflection, along with data collected and analysed, informs changes that are implemented within that educational context (Creswell, 2008). Mills (2006) identifies two forms of action research: practical and participatory. While practical action research in education typically focuses on local educational issues and improvement of related practice, participatory action research (PAR) seeks a much broader reach as it looks to contribute to communities and society through empowerment and emancipation of social groups and particularly of those who have been marginalized or silenced (Mills, 2006). PAR is inherently action oriented as it works to improve the lives and communities of those involved (Creswell, 2008).

Kemmis and McTaggart (2005) describe the self-reflective spiral that is characteristic in PAR. The spiral turns, coiling through stages of planning, acting, reflecting, and then revisits those stages as reflection informs the next turn of the action research spiral. The process is dynamic and responsive, and its defining qualities are clear: it is a social process, is participatory, practical and collaborative, emancipatory, critical, reflexive, and seeks to transform theory and practice (Kemmis & McTaggart, 2005). Researchers have embraced PAR as epistemology, as methodology, and as a method of doing research (Langhout & Thomas, 2010; Trott, 2019). Epistemologically, PAR recognizes that knowledge is co-constructed and realized through the interactions of researchers and participants, underscoring the importance of the researcher/researched relationship (Langhout & Thomas, 2010). The centralization of relationships and knowledge illuminate and confront the play of power and power plays in those relations and in knowledge creation and production (Langhout & Thomas, 2010). It follows that PAR can be understood as a methodology that embraces the principles and possibilities of lived social justice and

[1] This study, and its shared learnings and teachings, took place on the lands of the Mississaugas, the Anishnaabe, the Haudenosaunee, and the Wendat. We recognize the enduring presence of all the First Nations, Metis, and the Inuit people.

sustainability (Trott, 2019). PAR's foundational collaborations empower the voices and actions of those impacted by the study, typically those of individuals and communities who are marginalized, colonized, or silenced (Langhout & Thomas, 2010). As a method for collecting data alone (i.e., participants collect data for or with the external researcher), PAR can be taken up with any postpositivist paradigm as a means of strengthening the validity of the data (Langhout & Thomas, 2010).

Though commonly done with teachers, PAR can, and should, be done with children and youth as well. Following from the United Nations Convention on the Rights of the Child (UNCRC) (1989), children should be informed, consulted, and participate in decision making that impacts them and their lives. Specifically, Article 12 calls for children's views to be given due weight, thus necessitating that adults actually *listen* to children's voices, understandings, questions, and ideas (Kellett, 2010). It follows that PAR with children aims to give voice and control to children and, in the process, disrupt power relations in research and action, and recognize that children are key stakeholders (Kohfeldt et al., 2011). PAR with children is a ethical and democratic way of conducting research with young people (Kirby, 2002).

The active involvement of children as researchers in PAR brings a unique range of benefits to both the research and the young researchers. PAR that is well designed is an inclusive process in which children actively take up the role of co-researchers alongside external adult researchers rather than be positioned solely as the passively researched (Tanner & Seballos, 2012). Kirby (1999) notes that for an academic researcher looking to carry out detailed and in-depth research on the lives of children, it is appropriate to involve those young people in the role of researchers; "the reality experienced by children and young people in educational settings cannot be fully comprehended by inference and assumption" (Lloyd-Smith & Tarr, 2000, p. 5). Children are able to relate to and speak the same language as their peers, discuss shared experiences, and better understand and contextualize data that is collected (Kirby, 1999). Children will likely be identified as being on the same side as the children they are researching and this could minimize potential intimidation felt by young participants that can come with the inherent power and generational issues that accompany adults doing research on children (Kellett, 2010; Kirby, 1999).

There are also many benefits for children participating as co-researchers. Acting as a researcher in PAR can allow for the child's voice and perspectives to be heard (Kellett, 2010). Children participating as researchers may develop personal skills and knowledge in addition to leadership, teamwork, initiative, critical thinking, and interpersonal and organizational skills (Kirby, 2002). PAR allows children to explore and analyze issues and questions within their own communities and environments, and these participatory methods of doing research can both heighten children's awareness of issues and deepen their related understandings (Tanner & Seballos, 2012). Active participation as researchers can build children's confidence and self-esteem, and provide access to decision-making structures that in turn can motivate them to take action related to concerns in their communities and environments (Kellett, 2010; Kirby, 2002). Ultimately, PAR with children

challenges the power imbalance between children and adults and embraces children as social actors (Kirby, 2001, 2002).

Children's meaningful inclusion in research as collaborators and co-researchers has become more common in social and educational research over the past decades as more researchers have recognized the unique insights and contributions made by children and youth to better understanding of curriculum, teaching, and learning, and learning content and contexts (see, for example, Blanchet-Cohen & Di Mambro, 2015; Ozer et al., 2010; Tanner & Seballos, 2012; Trott, 2019). Within environmental education, there have been several notable inclusions of children as researchers in their local environmental communities and on issues within those communities. For example, the *Listening to Children – Environmental Perspectives and the School Curriculum* project centered children's participation and perspectives as it explored their community and environment experiences and understandings and they conceptualize those in relation to their own lives and school curriculum (Barratt et al., 2005; Barratt Hacking et al., 2012). Blanchet-Cohen and Di Mambro (2015) share their environmental action research work with children in their elementary school's Green Committee and their resultant school landscaping project and Green's (2016; 2017a; 2017b) work actively brings young children into research explorations of their local environments and traditional lands. In addition, studies (see, for example, Cutter-Mackenzie & Rousell, 2019; Tanner & Seballos, 2012; Trott, 2019) have explored the results, strengths, and challenges of children's participation in environmental education research related to climate change education and action.

Despite these notable exceptions and while we are moving towards participation, education and educational research falls behind other social science disciplines (e.g., social work, health care) with respect to the inclusion of children in PAR (Clark, 2004). Children continue to be excluded from consultation and participation in most research projects, processes, and conversations, and many studies of education involving children are typically done *for* children, rather than *with* or *by* them; few studies deeply and meaningfully recognize children as social actors and change agents in practice (Langhout & Thomas, 2010).

This paper shares the reflective conversations of members of the Eco Research Organization, a group of grade 6 children participating as researchers in a longitudinal ecological curriculum and research project, with Susan, their adult co-researcher. In it, we discuss together the children's experience of being researchers and its benefits and challenges. We look back on what was learned in engaging in the research processes and share broadly the important messages extending from the participatory actions of the research. These understandings are uniquely shared by the children themselves rather than solely interpreted by their adult co-researcher. Taken together, we not only talk the talk of children's participation in research, but we also collaboratively walk the walk as we amplify children's reflective voices, experiences, perspectives, and questions, and invite readers to similarly enact children's right to be heard in research and empower their ideas and actions.

THE EMPOWERING YOUNG CITIZENS PROJECT

The Empowering Young Citizens project was a longitudinal research study centred on children's engagement in ecological curriculum and research, starting with their school garden and organically extending into nature in their community. The study was informed by the intersecting theoretical frameworks of sociology of childhood, children's rights, and place-based education. We understand that children are active, creative, and social change agents who are experts in their own lives and experiences, and whose views and voices should be taken seriously (Corsaro, 2005; Mayall, 2000, 2002). Similarly, we honour children's right to express their views and opinions and have those given due weight and participate in decision-making related to the communities and environments that they live with and in (Lundy et al., 2011; Pascal & Bertram, 2009). We also recognize the importance of place and embrace the value of situating the learner and learning in the local environment and emphasizing the impact of situated learning experiences on children's developing connections to community, appreciation of the natural world, and commitment to active and informed citizenship (Sobel, 2004). Taken together, the sociology of childhood, children's rights, and place-based education necessitate the active participation of children in environmental education and action.

Empowering Young Citizens engaged children from City Public School[2], a downtown Toronto school, in ecological curriculum and research across the elementary years. The project began in 2016/2017, when the children were in Grade 1, and continued until the end of the school year in 2022/2023 when they were in Grade 6 and each year, children were invited to participate as researchers on their school garden and nature in their community. In addition to annual approval from Toronto Metropolitan University's Research Ethics Board, the school board's external research review committee, and the school principal to conduct the research, each year, children were required to provide both their own assent and their family consent[3] to participate in data collection.

The children's assent process included Susan reading the assent agreement aloud to each participating class and then answering questions from the children. Next, the children were given a set of assent cards (see Figure 1) to complete and return to Susan in an envelope. The cards allowed the children to provide their assent to participate in the research, be audio recorded, and be photographed. In 2021/2022, the assent cards also confirmed children's understanding of the steps that they and Susan would take to protect the school community from the spread of COVID-19. Before each research session, children would be invited to participate and were asked again if they were OK with being audio recorded and photographed. Families were provided with the consent form to review, sign, and return at the beginning of the school year. Those children who did not provide assent and/or consent were invited to participate in the explorations but were not included in any data collection.

[2] All identifying names of people and places have been changed to pseudonyms to protect participants' confidentiality. Children were invited to choose their own pseudonyms and if they elected not to, one was chosen for them.

[3] Family consent was used as a more inclusive identifier as not all children are living with a parent (i.e., some children live with their grandparents or other family members).

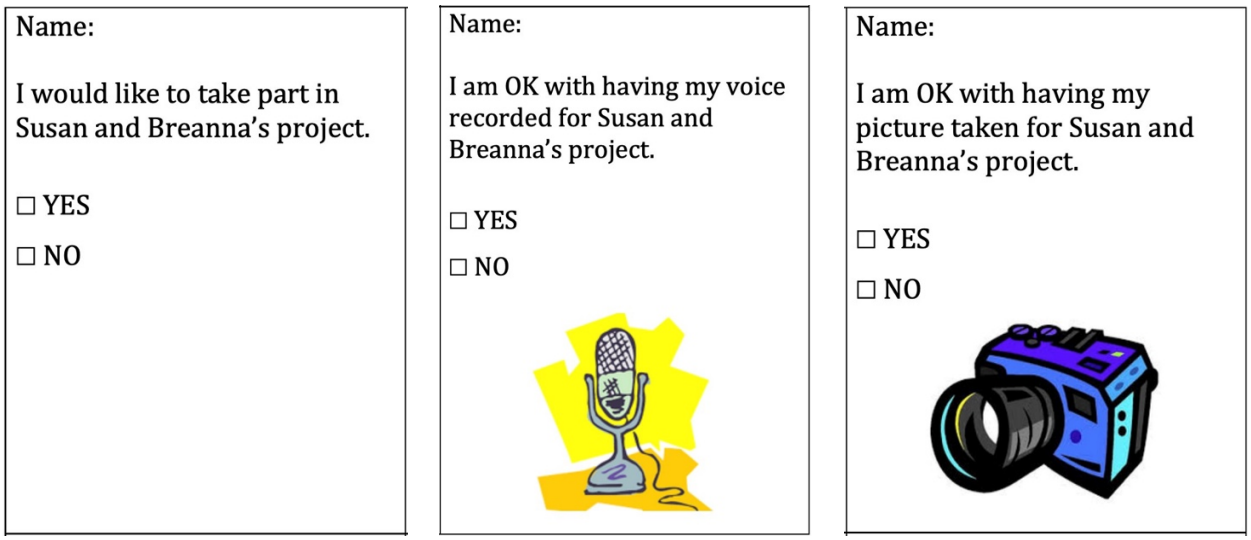

Figure 1. Children's assent cards

Our data collection was paused from mid-March 2020 until fall 2021 due to school closures and limited access related to COVID-19. The research team of Susan and one research assistant worked with one Grade 1 class, two Grade 2 classes, and two Grade 3 classes, and Susan worked with two Grade 5 classes on small group research projects based on their interests and questions. The projects ranged from first grade explorations of why people like the school garden and what people eat from the school garden to fifth grade studies of plant growth and cycles, classification and change, to the school garden's design and learning. Research sessions varied in duration and participation. Some sessions included whole class engagements but most involved Susan and/or a research assistant working together with a small group of children on their projects. Typically, Susan and the research assistant would join participating classes for one half day per week for the duration of the school year, though some weeks included additional visits. The classroom teachers did not participate in the facilitation of research sessions beyond supervision of the children. The children's data collection and analysis was dependent on the projects themselves and on the research decisions made by the children. In the first five years of the project, 82 different children participated in the research, with some of those children taking part in multiple years of the project.

In the final year of the project, rather than work with two Grade 6 classes, Susan facilitated a weekly environmental club open to all interested Grade 6 students. 30 children from across the four Grade 6 and 5/6 classes expressed interest, and eight children joined the club and completed the consent process (child assent and family consent, as detailed above) to be included in data collection. After the first few weeks of meetings, three children chose to no longer participate and five children - Taavi, Gila, Shake, Dragon Spy, and Tina - continued with the project until the end of the school year. Each of these children participated in the research project in previous years and was familiar with Susan and the project's activities (e.g., Shake participated in Grades 1, 2, and 5; Tina participated in Grade 5). Our sessions included the participating children and Susan and took place on

Wednesdays during lunch break in one of the grade 6 classrooms. The structure of the sessions varied depending on what we were working on (e.g., brainstorming, reviewing research findings, planning for action projects). We began our work by brainstorming what they would like to do related to the school garden and nature in their community. Ideas included organizing and expanding the garden, creating garden maps and signage about plants and animals, selling plants to fundraise for the garden, and increasing recycling and composting in the school and community. Their ideas were compiled into gardens and school grounds, plant sale, signs and raising awareness, and compost bins and recycling. We next reviewed and discussed explorations from previous years of the study, identifying recurring themes and ideas in the research findings to guide our project planning, and voted to name our group the Eco Research Organization.

Our first action project was a composting and recycling workshop. We surveyed teachers and polled students on whether their class had a compost bin, if they wanted a bin, and if they would like a composting and recycling workshop. The Eco Research Organization planned and presented primary and junior workshops to eight classes from junior kindergarten to Grade 6. Workshops included an introduction to the club and its goals, a slide presentation for junior classes and a story about composting for primary classes, a sorting activity (see Figure 2), and a discussion of the importance of composting and recycling.

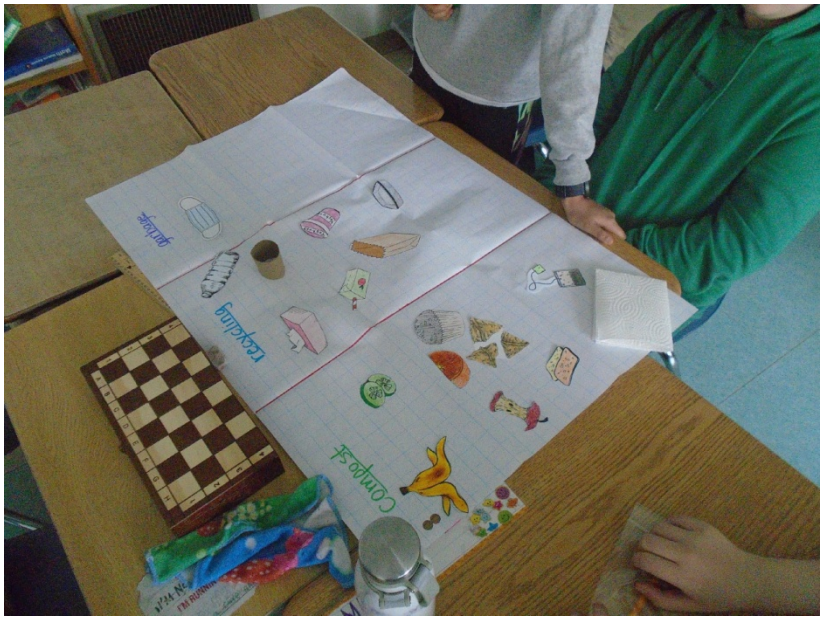

Figure 2. Composting and Recycling Sorting Activity

The Eco Research Organization also planned for new garden beds in their school garden. Drawing from the previous years' research findings, we compiled a list of the plants that children and school community members wanted to grow in the school garden - a variety of fruits, vegetables, herbs, and flowers. With this list as well as sun and shade requirements and the challenge of summer maintenance in mind, we selected and

purchased well-adapted native plants and six raised beds. We planned the arrangement of plants within each bed and planted in the early summer (soil and mulch were delivered after the end of the school year) (see Figure 3). We also purchased seeds to be planted the following year to add fruits, vegetables, herbs, and flowers to the existing school garden beds.

Figure 3. Four of the Newly Planted Garden Beds

This paper realizes the Eco Research Organization's intention to raise awareness about their research and actions and expands on our 2023 research presentation at the Canadian Society for the Study of Education (CSSE) annual conference. In the text that follows, we present our reflections on being a researcher as a conversation between members of the Eco Research Organization and Susan at the culmination of the final year of the Empowering Young Citizens project. Its dialogue draws from a concluding and retrospective discussion that Susan had with Taavi, Dragon Spy, Shake, Gila, and Tina, and is interspersed with textual insertions that layer in Susan's analysis of their experience in relation to the foundations, goals, and characteristics of PAR and specifically of PAR with children. Throughout the dialogue that follows, the Eco Research Organization members

are denoted by their pseudonym initials (i.e., T - Taavi, DS - Dragon Spy, S - Shake, G - Gila, Tn - Tina), and Susan by her initials (SJ).

"WHAT WAS IT LIKE TO BE A RESEARCHER?" THE EXPERIENCE OF RESEARCH

SJ So, to start us off in our discussion, tell me, what was it like to be a researcher?

T It was great to be a researcher! The reason why is because I had a lot of great times researching and learning about plants and animals. I also listened to the points and perspectives of others about the ways of nature.

DS Being a researcher's fun. You get to explore many new topics. You get to do interactive activities. And you get to test out theories. Well, not exactly theories.

S I was thinking about writing the

DS The graphic novel!

S I forgot what it's called. All the families

DS Classification

S I tried writing all of them and then I quit at order

SJ It's a lot to do the whole taxonomic system. Now, Dragon Spy, you said you were working on different theories, doing different activities, exploring lots of different things?

DS Yes

S We did the classification thing last year and then I quit because I went to India

SJ Yeah, so that's something that came up in doing research together… sometimes people were here and sometimes people weren't so we kind of had to be really flexible with that.

T It was also great to be a researcher as we did a lot of experiments. It also helped our minds.

SJ Helps your mind think of creative things.

T And also to build our teamwork skills as we worked together as a team.

SJ Lots of positives here! You had fun learning new things about the natural world, you shared your findings, you worked together as a research team.

Our discussion of the experience of being a researcher highlights several key components of the project and processes of PAR itself. The researchers noted being able to learn about new topics and about plants and animals. Each year, from Grades 1 through 5, children were invited to share what they wondered about their school garden and nature in their community and from these questions, research groups were created for the children to work together to explore their shared interests and questions. For Shake and Dragon Spy, their wonderings in Grade 5 were about classification and evolution of living things and so they, along with their group members, planned for and conducted research on how living things change over time and are organized and named. This focus on topics that are relevant and of interest to the children connects to the benefits of PAR as through their explorations, children can become more aware of issues and deepen their understandings of those issues (Tanner & Seballos, 2012). Dragon Spy also noted doing interactive activities and testing ideas and theories and Taavi said that they did many experiments. Learning by doing was an important part of the children's research experience and highlights the central shift within PAR with children as children take up an active role as researcher rather than the passive role of researched (Tanner, & Seballos, 2012).

Not only did the children actively engage in research related to their own interests and questions but they also shared their findings in ways that applied their own creativity and skills that were engaging to their peers. Dragon Spy recalled that he and Shake shared their research findings on classification and evolution in a graphic novel; they also created a flipbook and poster. Over the duration of Empowering Young Citizens, participating children made posters, murals, books, comics, and presentations, and performed plays to share with their peers and the school community what they learned in their research (see Figures 4 and 5). The children's unique ways of sharing their findings speak to their ability to communicate and connect with other children in ways that adults and adult researchers cannot, and that recognizes children's contributions to their communities and environments, itself a significant strength of PAR with children.

Figure 4. Panels from Captain Hot vs. Captain Cold comic (grade 2)

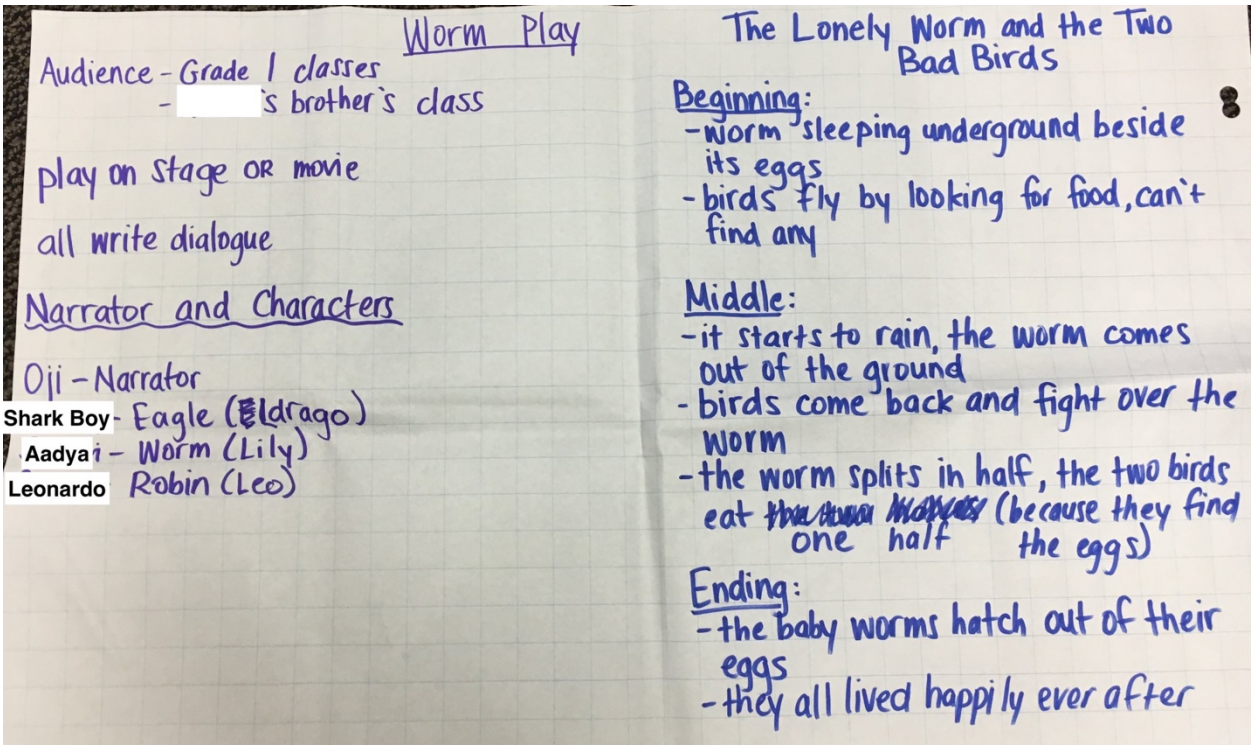

Figure 5. Planning for The Lonely Worm and the Two Bad Birds play (Grade 1)

Central to the children's experience of being researchers was collaboration and working together with their peers. Each year, the children worked together in small groups to explore their topics and research questions. In this final year of the project, the Eco Research Organization worked collaboratively to review earlier research findings and plan related action projects in their school community. Inherent in this group work was talking with and listening to others, something that Taavi noted. This interactive relationship of researcher/researched is foundational in, and a strength of, PAR as research collaborators work closely together to co-construct knowledge and in turn upset top-down power dynamics (Langhout & Thomas, 2010). Taavi also asserted that in his experience as a researcher, he developed his teamwork skills as he worked together with others; this is a well-documented benefit of PAR with children (see, for example, Kirby, 2002). It is interesting that Taavi identified the group work as teamwork done as a team. This alludes to the value of the collective effort and products over the individual's achievement.

"What was the Best Part about being a Researcher?" The Fun of Research

SJ OK, next question for you. What was the best part about being a researcher and doing research?

G It was fun because we got to learn many new things and we got to teach other people about what we found out too.

SJ Yeah.

G So, that was fun. The best part was probably being able to present stuff and showcasing our work. Presenting our work was also fun.

SJ OK, so teaching other people, that's kind of an important part of doing research too.

G And it felt good when people appreciated what we found out, that was fun too.

SJ For sure! I've gotten a few emails from teachers thanking you for coming to talk to their classes about composting and recycling.

G I am not sure if it was in Grade 2, we were doing plants I think, and I think that was the funnest part because we got to take it home.

S The best part about this is how I got to learn about classification [in Grade 5] and seasons [in Grade 2] and making the comic.

DS For me, the best part of being a researcher is … [pause for effect] learning new things and putting them to the test! And composing theories.

SJ You say learning new things and putting them to the test, what do you mean by that? Can you give me an example?

DS For example, if you have a sunflower seed and you grew it, and then you had an experiment to see how long it would last without sunlight. Then you had a hypothesis or theory that it would last for 8 days. And the results were that it would last for 7 days. That's experimenting with our theory and seeing if it's false.

T Or true.

SJ That's a great example of how we're really putting things to the test. We are almost literally doing it with the experiment.

T The best part of doing research I think was being able to explore our own ideas and questions and to make an impact in our community and our school for plants.

SJ Yeah.

T And another good thing about it was being able to work in a team and also see how other people, how other people's opinion, other people can have different opinions about things. And the last thing is being able to annoy Shake, hahahaha.

The Eco Research Organization recognized that they were learning in their research and identified this as one of the best parts of being a researcher. In their conversation with Susan, they noted that learning new things was fun and pinpointed researching and growing plants in Grade 2 (Gila) and learning about seasons in Grade 2 and classification in Grade 5 (Shake) as being particularly memorable. Dragon Spy detailed his feeling that learning new things, theorizing, and testing those new theories through experimentation were the best part of doing research as he shared an example of growing sunflowers from seed. Taavi liked the openness of being able to explore his and his group's own ideas and questions. This contrasts with a curriculum that is often teacher-planned and led; PAR with children necessarily enacts a curriculum that is co-planned and co-lived with young researchers as they engage in explorations and actions related to issues, ideas, and questions that are real for them. The Eco Research Organization's interest and enthusiasm in engaged and active learning through research parallel those identified by Trott (2019) in their study of children's constructive climate change engagement. Here, activities that children take part in must be enjoyable, interactive, and ideally ones in which children play an active rather than passive role to facilitate their constructive engagement and empowerment (Trott, 2019). In our project, the activities and engagements were motivated by the children's interests and questions and planned and enacted with facilitative support from Susan. This ownership over learning helped to ensure the children's interest and engagement. It also helped to catalyze the spiralling PAR processes of planning, acting, and reflecting as the young researchers planned and conducted studies of interest to them related to their school garden and nature in their community, reviewed and reflected on that research, and developed projects and engaged in knowledge mobilization to share findings and take action.

Complementary to their enjoyment of learning through their research, the Eco Research Organization's members liked being able to teach others about their work and their research findings. This teaching occurred when the children shared their research findings each year and in the action projects undertaken by the Eco Research Organization. Shake liked being able to share what he learned about seasons and classification and change creatively through comic books that he made. For Gila, sharing and showcasing her work was the best part of being a researcher; she noted how it felt good to have that work appreciated by others. Gila's comments allude to her feelings of pride in her work and in the Eco Research Organization's efforts. Trott (2019) noted the importance of children's agentic action in their engagement in environmental research and action. They identified how children's sense of agency can be fostered by their taking on "adult-like" responsibilities in research and action and that their heightened sense of agency relates to self-efficacy, confidence, hope, and motivation to affect change (Trott, 2019). Gila's fulfillment and achievement were similarly shown by Taavi and Dragon Spy after their conference presentation with Susan and the warm reception that their talk received. They felt proud of their work and the public acknowledgement of their research by adults - their parents, educators, educational researchers - affirmed their motivation, confidence, and drive to create positive change in their school and community. Following Trott (2019), young researchers taking constructive action through teaching and presentation is not only

an enjoyable part of doing research but also important in building their confidence, elevating their voice, and empowering them as social change agents.

Working together was an important and motivating part of being a researcher and doing research. Throughout their conversation with Susan, the members of the Eco Research Organization used 'we' in discussing the research engagements and reflections; taking part in research and the research processes with others mattered. Taavi specifically noted that a good thing about being a researcher was being able to work together in a team. It was meaningful to him to be able to collaborate with others, to listen to their opinions, and to recognize and respect differences in perspectives, ideas, and views. These elements of collaborative work that Taavi identified are foundational to both working together as a team and community broadly and in doing PAR specifically. In PAR with children, the interactions and exchanges between co-researchers (child and adult researchers) guide the processes and construct the products of research (Langhout & Thomas, 2010). Taavi clearly enjoyed being able to participate with friends as he notes, laughing, that he enjoyed being able to annoy Shake. For him and the other Eco Research Organization members, being a researcher with others was an enjoyable blend of work and play and this combination of children's engagements can encourage further action and empowerment to affect change (Trott, 2019).

"WHAT WAS CHALLENGING ABOUT BEING A RESEARCHER?" THE CHALLENGES OF RESEARCH

SJ Now, can you tell me about what was challenging about being a researcher and doing research?

DS We have to get permission from the teacher, the principal to do stuff, then from the vice-principal to do stuff, then from the secretary to do stuff, and then from EVERYONE to do stuff. Why so many permissions?

SJ This is true. There are a lot of people to talk to before doing things in schools.

DS The most challenging thing is … [pause for effect] thinking about ideas.

SJ Thinking about ideas?

DS Yeah. We have a lot of ideas but eventually we run out of them. And when we run out of them, we have to be in silence, thinking, and that's not fun. I don't like silence. I like doing stuff, interactive stuff.

SJ OK, so the challenge is ideas. We start off with a lot of ideas and that can be challenging?

DS Yes, because once you run out of ideas, you sit in complete silence and think about it.

SJ Do you think we have run out of ideas before?

DS No, not that much because we have a lot of people, six people. But if it was a group of three, then you would run out quicker.

SJ OK, Gila, how about you?

G Even though, like, sharing our work is fun, sometimes presenting is kind of scary… Even when, like when you don't know some people and you are presenting to them, even if you know them sometimes it's even scarier… So sometimes you're just like, oh my gosh, they're going to be judgmental about our presentation but sometimes they're not.

SJ Yeah, you never know how people are going to respond to what you have to say. They might be judgmental, they might be really supportive, they might be a little of both.

T It was challenging for me to keep my mouth shut.

SJ You do have a lot of ideas.

DS Bursting! Hahaha!

T Another thing that was challenging was being able to, like not being able to, like do things quick. Like, for example, homework. You just have to quickly type something, write some things, and boom, you're done. Like, having the patience to see how, to let things go by itself… And just, I don't like to have to wait a lot.

SJ Taavi, that's a really great point, where sometimes it can be hard [to wait] if you have an idea about how something can be done, you want to just hurry up and get it done. But, working in a group, you sort of have to…

T Wait.

SJ Exactly. You have to wait, and listen to other people's ideas, and take them on board too.

T Also, it's very difficult to be able to work, like, making a change in the community because you might be uncomfortable about it.

SJ Making those changes can be really challenging because sometimes it's hard to change, it's hard to change your actions.

T And also, like, the environment. Not many people will say, I won't say great but won't, like, don't do a lot of changes, like the environment. So, it's also, how would others react when you do this? And it's also kind of scary. Let's say you do something that not many people like and they oppose it. That's difficult.

SJ How about you, Shake? What was challenging about being a researcher?

S I don't know.

SJ Was there anything challenging?

[S shakes head no]

SJ One of the things that's hard for me as an adult is stepping back and letting you guys take the lead.

T Actually?

SJ It is really hard.

DS Just be lazy, that's all.

SJ Hahaha… it's hard because of course I'll go into things, and I'll have ideas of what things might look like. And remember I was also an elementary school teacher and elementary school teachers are planners. But I know it's not MY research project, it's OUR research project, right?

The Eco Research Organization members identified in their conversation with Susan some challenges that they experienced doing research and being a researcher. Dragon Spy shared that he saw thinking of ideas to be a challenge in doing research. Though this was not the case for our research team because, as he noted, we had six people working collaboratively but if we had fewer researchers or were working together for a longer period of time, we might have run out of ideas and had to pause our activities. Since action and interaction was central in Dragon Spy's enjoyment of being a researcher, a pause and silence that might accompany it was not desirable to him. Collaboration and the pooling of ideas for and of research was important to Dragon Spy and is similarly key in PAR. Collaboration is foundational in PAR as it engages and empowers the voices and actions of individuals and communities (Kemmis & McTaggart, 2005; Langhout & Thomas, 2010). Our work together both validated the contributions of the young researchers and established a responsive and generative space for sharing ideas and questions and realizing children's action and agency in the community.

Dragon Spy also noted that we needed to obtain many permissions to conduct our research activities; to him, it felt like we had to ask everyone in a position of power at the school (i.e., teacher, principal, vice-principal) for consent to do things. While PAR with children disrupts power relationships, it often occurs within structures where power is inextricably embedded and the school is a good example of this. Our research together opened up curriculum and research to children – their engagement was central to the processes and products of the project – but we remained within established hierarchies of decision

making and power. Susan appreciated Dragon Spy's assertion as logistically, the process of doing research in a school with children involves many levels of review, approval, permission, and informed consent: university ethics review board, school board research review board, school administration, teachers, family consent, and children's ongoing assent. These steps can certainly feel like a barrier, indeed a series of hurdles to be cleared, to doing research with children, but they are necessary to ensure that the best interests of the child are considered in the research and the research activities that include them (UNCRC, 1989). This is especially important in PAR with children as children can (and should) be included in all research processes and products. What remains central though is the children's own voice and this follows in their participation in the consent process. And while our work together did not dismantle the power relations in the school community, relations that are clearly understood by children, we certainly upset the norm and made space for difference in the rigidity of the structures framing school power hierarchies.

Judgement and critique from others were a challenge noted by Gila and Taavi, interestingly in relation to sharing findings and making positive change, both things about research that they enjoyed. For Gila, while she liked being able to present the group's work, sometimes it was a bit scary for her. She was mindful of how audiences would respond to her words and her work; some may be judgemental of the research and not supportive of her and the Eco Research Organization's efforts and activities. Furthermore, Gila recognized that it can even be scary to present to people that you know. So, despite having fun presenting to various audiences, Gila still felt some worry and apprehension, enough to identify it as a challenge in being a researcher. Taavi concurred that sometimes you might say something that others disagree with and extended this concern about audience judgement and critique to his consideration of how people might respond to the Eco Research Organization's suggestions to make changes in the community to better care for the environment. He mused that some might be uncomfortable making changes and Susan agreed that it can be very difficult to make changes. Gila and Taavi's hesitations are shared by many researchers in dissemination of findings but are no doubt heightened for the young researchers. They are used to being spoken to, not speaking, and listening, not being listened to in regards to issues and explorations in their communities and environments. For the Eco Research Organization, this shift into the role of active meaning and decision maker and activist was significant and related as well to the hierarchical power structures alluded to in Dragon Spy's comments. Children's engagements in PAR require that we take up the articles outlined in the UNCRC, namely that children's views be given due weight and that children are listened to (United Nations, 1989).

A final challenge to being a researcher is the shared leadership and collaboration in working together as a research team. Taavi recalled how it was difficult for him to slow down and work at the pace of the rest of the group; he had a lot of ideas and liked to work quickly on things and get them done. He was challenged to be patient and wait, allowing for all members of the Eco Research Organization to contribute before negotiating and moving ahead together with next steps. Collaborative work takes time, and most often more time than anticipated, especially within institutional structures and schedules. Noted by Langhout and Thomas (2010), time constraints can rush PAR's relationship building and

collaborative processes. In this project, Susan was mindful of these dynamics as she navigated her own role as an adult co-researcher with her young research partners. She shared that for her, it was sometimes hard to step back and allow the time for children to take the lead and steer the research and its projects. As a former elementary school teacher, she was used to planning for activities but recognized that the project was not hers, rather it was the Eco Research Organization's shared work. The navigation of the roles of the adult and child researchers in PAR, and the nature of adult and child research relationships underpinning those roles, has been discussed by many (see, for example, Langhout & Thomas, 2010; Kellett, 2010). Kellett (2011) asserts that adult researchers must move beyond simply recognizing children's rights and their expertise in research; we must open up opportunities for their participation as researchers and turn "rhetoric into reality" (p. 209). For Lundy et al. (2011), this authentic and respectful opening requires that adult researchers create a safe and inclusive space within which children can share their views, empower children to express those views, provide an audience that will listen, and support the actions that follow. We can encourage and facilitate children's participation as co-researchers by balancing support with management through enabling children as competent and capable researchers, sustaining and teaching children research methods and tools, supporting engagement, helping with data collection and analysis, and empowering dissemination of findings rather than influencing, limiting, judging, controlling, and hijacking ownership of the children's work (Kellett, 2011). Together, we are invited to critically reimagine and realize roles in research that upset traditional power dynamics between children and adults, and between children themselves, and embrace respectful relationships that enact social justice ideals and equity principles through PAR.

It is interesting that none of the Eco Research Organization members said that they were challenged by a lack of skills as researchers. This contrasts with Kellett's (2010) declaration that "a barrier to empowering children as researchers is not their lack of adult status but their lack of research skills" (p. 201). As noted earlier by Taavi, collaborative research skills (e.g., listening, teamwork skills) are part of the experience of being a researcher and are applied as they conduct their explorations and activities. Perhaps it is not necessarily that they are only just learning research skills in their participation as researchers but that they are instead practising and strengthening their prior skills through real-life applications in research.

"What did you Learn?" The Curriculum of Research

SJ My next question for you, what did you learn about in doing your research? And you can think of the whole span of the project, even from when you started in grade one. What are some of the things that you explored?

T I learned teamwork skills. I also developed my leadership skills, like being an activist, and helping others' competencies and skills.

G Apart from the actual things from my research, I also learned how to figure out things from my surroundings. And these research skills also probably helped me with my assignments because I use them in research.

SJ That's an interesting skill, being able to figure out things from your surroundings.

DS In research, we learned about evolution. We learned about the things that favour evolution. Like nature favours two eyes over one eye, nature favours limbs over fish legs on land, and nature favours no tail over tails, things like that.

SJ Shake, how about you?

DS Something you did in Grade 2.

SJ [to Shake] I remember what you did in Grade 2…

S Oh yeah!

SJ What were you studying?

S Seasons. And Yusuf and I made a comic. So, Captain Hot and Captain Cold, they were fighting each other, and then Captain Hot won.

T And why did Captain Hot win? How?

S 'Cause he just did. How am I supposed to remember? I made it in Grade 2, not yesterday.

The curriculum that was realized through children's engagement as researchers related to content knowledge and skills development. Dragon Spy highlighted what he learned about evolution in his research in Grade 5: how nature favours some characteristics in living things over others. Also, earlier in our reflective conversation, Shake shared that he learned about seasons and classification and Gila talked about learning about plants. Learning content is not surprising as our research together focused on their interests and questions about their school garden and nature in their community and this approach is not unlike child-centred and inquiry-based curriculum and pedagogy. PAR engages researchers in explorations of issues and questions that impact their lives, communities, and environments. With children, PAR allows for their deep engagement in studies of interests and relevance to them; the topics explored are inherently meaningful as they come from the participating young researchers themselves and can at once support developing understandings and awareness and motivate related actions (Kirby, 2002; Tanner & Seballos, 2012).

Rather than speak to content knowledge gained through doing PAR, Gila and Taavi highlighted the research skills that they learned and applied both as researchers and learners outside of the project. Taavi again spoke about the skills that he learned and strengthened: teamwork and leadership. He likened those skills to those used by activists and recognized that in enacting those skills, he was supporting his co-researchers in their

own learning of skills and competencies. Gila's comments spoke to her ability to apply her research skills outside of the project itself. She recognized that she was able to use her surroundings to learn and "figure things out." She also thought that her research skills helped her in her schoolwork and assignments. The Eco Research Organization's recognition of learning research process skills as researchers takes up experiential learning: the children actively learned and honed skills by doing and applying and preferred those types of interactive engagements. Here, we recognize a reconceptualizing of research and research processes as praxis or embodied theory in which children learn and practice skills through their mentored engagement in PAR (Langhout & Thomas, 2010).

"WHAT DO YOU WANT TO TELL THE WORLD ABOUT [BEING A] RESEARCHER? CONCLUDING THOUGHTS ON RESEARCH

SJ Last question. What do you want to tell the world about your participation as researchers? What would you tell people about your experience?

DS That it was very good.

SJ It was very good? Tell me a little more.

DS [singing] And it was very good, it was very lovely. You learn humility, you learn wisdom, and you learn honesty.

SJ OK, Shake, it doesn't need to be in a song.

[laughter]

SJ What would you want to tell the world about your participation as a researcher?

S It is fun. Um, that you should be a researcher because it's fun and you get to do things that you enjoy.

T I would tell the world being a researcher is a really, really good thing. It involves a lot of patience for me, and cooperation and coordination with others so being a researcher is just great and also researching on things is also fun.

SJ And Shake, you said you get to learn more about your own ideas?

S Your interests.

SJ What would you say to people who, you know, are wondering whether or not kids can actually do research?

T That we can do research!

DS We can do research, we can march in the world, and we will succeed, OK?!?

G I think it's from a fresh perspective.

DS This year we are using the research to create a theory and to grow plants. We are using the research collected the previous years to do stuff right now.

SJ Is that important in research?

S It's very, very important.

SJ Why? Why is it important to share findings and take action?

DS Because it makes people get aware. Like, if you actually do something, it gets aware. But we were doing research all these years. Now we are actually DOING something and presenting our research.

SJ And we're making people aware.

DS Yeah.

SJ Who should be aware of research that's done in schools, with kids, by kids, who needs to know about it?

DS The government. The whole world.

S And your parents.

T And the whole world… We need attention, for example, in the part of our group project, you need support from people also.

DS We don't need attention.

G I mean, you could always anonymously do that, because you are educating people… It's like, more of educating people about our topics rather than trying to make ourselves known because you always anonymously, you know, build a community on what you are to spread out in the world.

SJ So it sounds like you are saying it's more about the research that's being done than about who is doing the research.

G Mmm hmm.

The Eco Research Organization's experience of being researchers and doing research was positive - it was fun, very good, and very lovely. The children liked being able to do things

that they enjoyed and learning more about their interests through their research; they were enjoying PAR's inherent study of topics and issues of relevance and interest to participant researchers. Like Trott (2019), the members of the Eco Research Organization were highly motivated by their engagement in fun, creative, and collaborative explorations and activities of their own choosing and design. This constructive engagement and their sustained and active role in all of the research processes reinforced and enhanced their positive experiences and their developing sense of agency as researchers and activists. These were their projects and their explorations; they were connected to and invested in the research, and their enjoyment further motivated engagement and commitment to research and action. Following the UNCRC (1989), this engagement gives voice and control to children and requires that adults listen to their understandings, ideas, views, and questions (Kellett, 2010). As noted earlier, children's increased understandings and awareness of issues and their related actions are some of the unique strengths of children's engagement in PAR and these are clear in the Eco Research Organization's work and reflections (Langhout & Thomas, 2010; Tanner & Seballos, 2017).

Taking action and raising awareness related to their research was important to the Eco Research Organization. Dragon Spy asserted that by actually doing something, they can make people aware of findings and implications of their research. For the Eco Research Organization, this meant using previous years' research to inform and motivate actions: the composting and recycling workshops, the garden bed additions, and the research presentations and displays. In their action and raising awareness, the children were continuing their engagement with PAR's processes of planning, acting, and reflecting, and embodying PAR's foundations of participant emancipation and empowerment. The children's engagement in research-informed action and activism confirmed, strengthened, and catalyzed their perceived and realized capacities as competent, capable, and empowered social actors and change agents; the children were recognized as key stakeholders, a primary goal of PAR (Kohfeldt et al., 2011). This runs counter to the dominant narratives related to the perception of children's limited capacities and the Eco Research Organization confronts those assumptions in their successfully enacted research processes and products. As Dragon Spy poignantly stated: "We can do research, we can march in the world, and we will succeed!" Children can, and should, participate in research and action now, not only in the future as adults.

Dragon Spy asserted that through research they learned humility, wisdom, and honesty. Perhaps though those qualities are what children can uniquely bring to research projects through PAR. Children, for the most part, have not been influenced by the funding agency interests, institutional goals, and individual promotion and prestige. There is an unfiltered clarity in children's participation in research, in their contributions and questions, and in the possibilities they put forward for explorations and actions. As acknowledged by Gila, children bring a fresh perspective to research, one that comes with being experts in their own lives and experiences. The young researchers' humility, wisdom, and honesty come through in their discussion of the research message and messenger. While Taavi insists that attention needs to be paid to the fact that children conducted the research, Gila and Dragon Spy disagree. Gila details that the content and findings of the research are more

important than the researchers themselves; the message comes before the messenger. For research done by adults, and by academics, in other words, those who traditionally engage in research activities, this is arguably the case. However, in PAR conducted by children, and indeed by any marginalized group or community, the researchers themselves are significant as well. For the Eco Research Organization, and the dozens of children who participated as researchers in this longitudinal study, the research findings and actions that followed are meaningful in themselves and because they came from research planned by children, conducted by children, and embodied in the actions of children. It is not either the message or the messenger but rather the message AND the messenger.

The message and messenger of children's research needs to be heard, and heard clearly, by those in positions of power and powerful positions: parents, governments, the whole world. The Eco Research Organization has communicated in words, and in actions, that children can and should be included in research and action as researchers and actors, not solely as those being researched and acted upon. Embracing PAR with children as a child-led and participatory approach to doing and realizing research necessarily upsets the all too common top-down, adult expert-driven methodologies and methods that are hegemonic in studies of education, children, and children's experiences. This shift in roles from researched to researcher respects in practice as well as theory children's right to be informed, consulted, and participate in decision making related to issues that impact them and their lives (UNCRC, 1989). It necessitates that children's voices and views are listened to and given due weight and recognizes that children are important stakeholders in their communities and environments now, and competent and capable agents of social and environmental change and action as young people, not as future adults.

Our collaborative research over the past six years has confirmed the importance of opening up curriculum and research in environmental education, and in education more broadly, to children's participation. Children need to be listened to and their voices must be heard. If we are to really walk the talk and recognize children as experts in their own lives who are capable of making decisions in community and environmental matters, we must actually listen to what they have to say, respect their opinions, and be guided by their interests and questions. Children's ideas, beliefs, and opinions matter. Children bring creativity, imagination, and unique understandings and skills to the research scene. Children's perspectives in research can be markedly different from those of adults. They bring to curriculum and research clarity and curiosity. They know the worlds that they live within better than anyone else, and certainly better than an external adult researcher coming in from outside of the community. Embracing children as researchers allows for those children to be empowered change makers in their schools, communities, and environments.

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BIOGRAPHICAL NOTE:

Eco Research Organization is a group of grade 6 students from a Toronto elementary school. They worked together with Susan Jagger in the 2022/2023 school year on environmental action projects related to their and their peers' research on their school garden and nature in their community in the Empowering Young Citizens longitudinal study.

Dr. Susan Jagger is an Associate Professor in the School of Early Childhood Studies at Toronto Metropolitan University. Her research interests include environmental education, learning gardens, participatory research methods with children, and curriculum studies.