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"They Taught the Children in School and It Was Them That Came Home to Teach Me"—Community Perspectives on How Students Influenced Recycling Attitudes and Behaviours in A Remote First Nation in Canada

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Abstract

Environmental education provides learners with information and knowledge that can change their attitudes and behaviours about the environment. The environmental education literature shows that K-12 students have largely been the focus of analysis; however, there is an increasing body of the literature that assesses how students transmit environmental knowledge to adults. Utilizing a qualitative case study approach, this paper examined how K-12 students in a remote and isolated First Nations community in Canada, Heiltsuk Nation, transmitted knowledge about recycling to adults and its resultant impacts on attitudes and behaviours in the community. Our analysis revealed that within Indigenous cultures, adults—particularly Elders—pass down their environmental knowledge to younger generations. However, K-12 students, who participated in the community's elementary school recycling program, transferred their knowledge to parents, grandparents, and community members. Community members that were interviewed indicated that they developed an understanding of recycling and started to recycle, compost, and reuse their waste when students came home to teach them. Given that this change in attitudes and behaviours happened when there was no community-wide recycling program in the community, Indigenous communities that have challenges with solid waste management can develop similar waste diversion programs with children as a focus to help spur change in their communities.

Keywords: environmental education, intergenerational influence, First Nations, waste management, school children

"Ils enseignaient aux enfants à l'école et ce sont eux qui sont rentrés pour m'enseigner" - Perspectives communautaires sur la façon dont les étudiants ont influencé les attitudes et les comportements de recyclage dans une Première Nation éloignée du Canada

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Résumé

L'éducation environnementale fournit aux apprenants des informations et des connaissances susceptibles de modifier leurs attitudes et leurs comportements vis-à-vis de l'environnement. La littérature sur l'éducation environnementale montre que les élèves de la maternelle à la 12e année ont largement fait l'objet d'analyses; cependant, de plus en plus d'ouvrages évaluent la façon dont les élèves transmettent les connaissances environnementales aux adultes. Utilisant une approche d'étude de cas qualitative, cet article a examiné comment les élèves de la maternelle à la 12e année d'une communauté des Premières Nations éloignée et isolée au Canada, la Nation Heiltsuk, ont transmis aux adultes des connaissances sur le recyclage et ses impacts sur les attitudes et les comportements dans la communauté. Notre analyse a révélé qu'au sein des cultures autochtones, les adultes, en particulier les aînés, transmettent leurs connaissances environnementales aux jeunes générations. Cependant, les élèves de la maternelle à la 12e année, qui ont participé au programme de recyclage des écoles élémentaires de la communauté, ont transmis leurs connaissances aux parents, grands-parents et membres de la communauté. Les membres de la communauté qui ont été interrogés ont indiqué qu'ils ont développé une compréhension du recyclage et ont commencé à recycler, composter et réutiliser leurs déchets lorsque les élèves sont revenus à la maison pour leur enseigner. Étant donné que ce changement d'attitudes et de comportements s'est produit alors qu'il n'y avait pas de programme de recyclage à l'échelle communautaire dans la communauté, les communautés autochtones qui ont des difficultés avec la gestion des déchets solides peuvent développer des programmes similaires de réacheminement des déchets avec les enfants comme objectif pour aider à stimuler le changement dans leurs communautés.

Mots-clés : éducation à l'environnement, influence intergénérationnelle, Premières Nations, gestion des déchets, écoliers

1.0 Introduction

Environmental education (EE) is an essential tool for providing information and building learners' understanding of environmental issues and challenges. It is viewed as an approach that can result in attitudinal and behavioural changes about the environment because learners broaden their knowledge and perspectives about environmental issues, evaluate or assess information provided, and act on them (Ballantyne et al., 2001; Birdsall, 2010; Rioux & Pasquier, 2013). Consequently, the information, environmental knowledge, and skills received can help protect the environment and sustain it for future generations (Palmer & Neal, 1994; Erhabor & Don, 2016).

Over the years, there has been a proliferation of environmental education research, and authors have examined outcomes, such as attitudes, behaviour, and environmental knowledge (e.g., Johnson & Manoli, 2011), utilizing a variety of research methods and designs, including quasi-experimental design, action research, case studies, and comparative studies (e.g., Aguirre-Bielschowsky et al., 2012; Szczytko et al., 2018). These research endeavours have also focused on diverse fields, including water resources (Çoban et al., 2011), energy (Lee et al., 2013), conservation (Flowers, 2010; Hansel et al., 2010), and waste management (Grodzínska-Jurczak et al., 2003; Rioux & Pasquier, 2013; Maddox et al., 2011). The majority of research in EE has focused primarily on young populations, specifically K-12 students (approximately from 5 to 18 years) as the unit of analysis (Ardoin et al., 2017). This is because children can be taught relatively easily, are more influenced than adults, and are seen as protectors of the environment in the future (Ham et al., 1989).

Although children are the primary focus of analysis, researchers continue to explore, examine, and/or assess intergenerational influence or intergenerational transfer of environmental knowledge from children who are involved in EE programs to their parents and those in their households. Intergenerational influence in this body of research asks the question: Do children transfer what they learn from programs to their parents, and if they do, does the knowledge lead to changes in parents' attitudes and behaviours? (Vaughan et al., 2003; Volk & Cheak, 2003; Straub & Leahy, 2017). Some authors (e.g., Ballantyne et al., 2001; Duvall & Zint, 2007; Hungerford, 2010) recognize children as environmental catalysts who can influence parents' environmental attitudes and behaviours; however, Straub and Leahy (2017) claim that there has not been extensive research evidence to support the widely held assumption that knowledge is transferred from children to parents and that the impact on adults is difficult to record.

Intergenerational transfer of environmental knowledge is important to the cultural survival of Indigenous peoples of Canada because of the intimate relationship their communities have had with the land, which is explained to include earth, water, air, non-human components, and spirituality (Simpson, 2002; Nesterova, 2020). The knowledge from this relationship with the land, referred to as traditional ecological knowledge, is a "cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment…" (Berkes et al., 2000, p. 1252). Transferring environmental knowledge among Indigenous Peoples is seen as the preserve of Elders, who "hold knowledge in the traditional stories, in the ceremonies, and in the practices (…)" (Hogue, 2016, p. 162) and are, therefore, teachers and guardians of knowledge. Thus, through a variety of avenues, such as

storytelling and land-based learning, Elders and Knowledge Keepers transmit their knowledge and experiences gained about the environment to younger generations. This process of intergenerational influence or transfer of environmental knowledge, therefore, focuses on the transmission of knowledge from Elders to the younger generation or simply from adults to children. While it is now known that the elderly pass down their knowledge to younger generations within Indigenous cultures, the literature has yet to highlight whether children transfer their environmental knowledge to adults and the impact of such knowledge on adults. Thus, there is a gap in understanding regarding children transmitting their environmental knowledge to adults, how this is done, and how the environmental knowledge influences adults.

Our research provides information that attempts to fill this gap by examining an elementary school recycling initiative in a remote and isolated First Nation community in British Columbia, Canada. The research purpose was to examine whether K-12 students transferred their environmental knowledge about recycling to adults in their households and to ascertain the impact the knowledge transfer had on recycling attitudes and behaviours of adults that were influenced by students. This paper is organized into five sections. The introductory section is followed by a discussion of the methods used for the research. The result of the research is then presented in the next section, after which a discussion of the results/findings is provided. The final section are the research conclusions and recommendations.

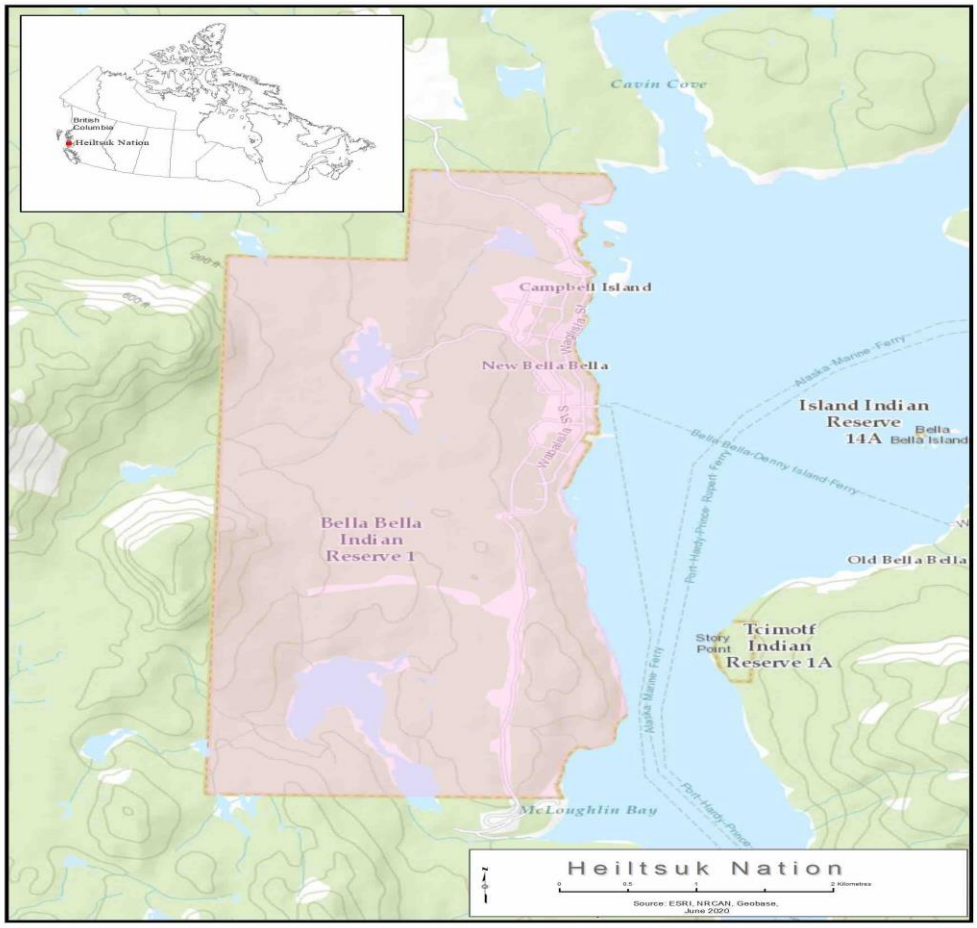
2.0 Methods

The research was conducted in Heiltsuk Nation (also known as Bella Bella) (see Figure 1) in British Columbia, Canada. The community has an on-reserve population of about 1,020 people and approximately 330 private dwellings (Statistics Canada, 2016). This was a qualitative case study research that sought to gain detailed information about the community's elementary school recycling initiative/program and how it impacted recycling attitudes and behaviours (Yin, 2014). The community was purposively selected because of the elementary school recycling program. Additionally, it was actively operating composting, recycling, and reuse programs; operated a transfer station; and sorted out its waste. These characteristics showed that the community was 'advanced' in its waste management in terms of infrastructure, facilities, and programs. The community also agreed for the research to be conducted in their territory.

Semi-structured interviews and document review were the two data collection methods utilized in this research, and the target group included schoolteachers, staff in charge of municipal solid waste (MSW) management, and community members (e.g., parents, grandparents, great grandparents, etc.) who had their children enrolled in the school's recycling program.

Respondent-driven sampling was utilized to ensure that we were interviewing participants whose children, grandchildren, and great-grandchildren were part of the school's recycling program when it started (Gile, & Handcock, 2010; Daniel, 2011). The lead author collected data from 20 research participants, which lasted approximately 40 minutes each. Questions asked included when the elementary school recycling program started, who was involved in the program, activities that children were involved in and learned from, what children did to encourage recycling in the community, and how the community was impacted by what the children shared with them.

Figure 1. Map of Heiltsuk Nation (Heiltsuk Nation).



Source: Assuah, 2020.

Permission was sought from participants to audio-record the semi-structured interviews. Interviews were transcribed and sent to all participants for review before being used (Creswell & Poth, 2016). Upon receiving transcripts from participants, the software NVivo™ (QSR 2010) was used to organize the resulting data. Emergent themes that were grounded in the data were then developed, such as the evolution of the program, avenues for students to learn, and the impact of the recycling program. These are extensively presented and discussed in the next two sections of the paper. We present data using quotes to provide a voice to participants. To ensure anonymity and confidentiality, participants are referred to by pseudonyms; for example, P7, P8, etc.

In line with the Ownership, Control, Access, and Possession (OCAP) principles and chapter 9 of the Tri-Council Policy Statement on conducting research with Indigenous Populations in Canada, approval to conduct the research was sought from the Heiltsuk Integrated Resource Management Department [HIRMD] Research Advisory Committee. The HIRMD Research Advisory is the body in charge of ensuring the ethical conduct of research in the community. The committee reviewed the application to conduct the research with the community, and after the

committee was satisfied with its review, the research was asked to proceed. Additionally, this manuscript was submitted to the above committee for review. The committee approved the publication of the manuscript before it was submitted to this journal for publication.

3.0 Results

3.1 Waste Management Facilities and Programs in Heiltsuk Nation

Traditionally, Heiltsuk people lived off the land and sea and practiced their traditional ways, such as hunting, trapping, fishing, and harvesting all year-round. These traditional practices produced mainly biodegradable waste, such as shellfish shells, fish bones, mammal bones, etc. These wastes, when decomposed, produced black soil that was used to plant, for example, berry bushes, fruit trees, and other garden food. However, the introduction of packaged goods into the community, coupled with infrastructural and other developments, resulted in the generation of a complex waste stream made up of both degradable and non-degradable items. The presence of ever-increasing waste meant that the community needed to find ways to deal with it, including burning co-mingled waste and transporting waste to waste management facilities. Regarding the latter, P24 recounted that, "Garbage was loaded into a Royal Blanco trailer and sent to a landfill in Washington. Garbage was kept in what is affectionately called a bird cage currently at the transfer station. They used to throw everything into it (...)."

However, the community now has a recycling depot and has rolled out waste diversion programs, including recycling, composting, and reuse. It took the community many years of research, discussions, preparation, and investments to establish these programs. The recycling program involves residential curbside pick-up by the community's solid waste department, which collects cardboard, plastics, bottles, cans, glass, and other household recyclables once every week. Community residents who miss pick-up days have the option of disposing their recyclables in labelled waste bins at the community's recycling depot. Households are provided with blue bins to serve as receptacles for cans, bottles, glass, and other recyclables, while red bins are provided for cardboard.

Similarly, the community has a composting facility and has established a compost curbside pick-up program, where compost is picked up once every week from community members that are part of the program. Compost bins are provided to community residents and picked up once every week. There is a community-wide, volunteer-managed reuse program, popularly referred to as the free store. In this program, community members send items, such as clothing, toys, shoes, and home appliances, which they no longer have use for but are in good condition to the store. The items are then picked up by community members who need them or can find a use for them. An important characteristic of the program is that items that cannot be reused or are not in good condition are not accepted at the facility. In addition to these diversion programs—recycling, composting, and reuse—the community also provides free curbside pick-up for household garbage once per week. It is noteworthy that there is no landfill in the community, so household garbage is barged out to a waste facility in Port Hardy, British Columbia. Additionally, community members do not pay to participate in any of these programs nor are they charged any collection fees.

The programs being run by the community put them among very few First Nations in Canada that have such facilities and effectively run them. In fact, while many municipalities across Canada can boast of recycling programs, it cannot be said that they do have all the four programs that Bella Bella provides for the community. Additionally, while municipalities charge fees for waste management services, the programs are free in the Heiltsuk Nation.

3.2 Evolution of the Bella Bella Community School Recycling Program

Prior to establishing the recycling and composting programs in the community, "the school [Bella Bella Community School] was the only place where we recycled on a large scale," according to P19. This was because a schoolteacher started a recycling program among students to promote recycling in the community. P19 explained that:

> We had a lot of committees at the school that teachers signed up for. I joined the Green Group, which was made up of our former kindergarten teacher, two other teachers, our computer lab coordinator, and myself. With that committee, we had an in-school program focused on recycling. We used the gym changing rooms and turned them into our recycling space because these rooms were not being used. The students brought in a lot of beverage bottles, milk jugs, and other recyclables (…). Also, with the Green Group, we did community cleanups, talked about waste in the community, and did an Earth Day fair. At that time, our garbage was openly burned; there was no recycling, no composting, nothing like that here.

Other participants confirmed the initiative. For example, P1 explained that:

> There was a lady called [Name withheld], who was a teacher and very passionate about waste (…). She started education [about recycling] in the school, where she would organize contests among her students on recycling and gave out prizes. It started that way, and she will take the waste to the recycling facility in Port Hardy and eventually the school was inundated with a lot of recycling.

Some participants even claimed that the recycling program in the school birthed the community's recycling program described above:

> The whole recycling program here started with the school children and the beverage bottles. The children in kindergarten said they wanted to recycle, and it started with one class (…). As it evolved, the community got involved, the Heiltsuk Tribal Council (HTC) got involved, and it appeared that we needed a recycling program (…). Because the children started the program, it was very much received by the community. (P10).

P18 supported this claim and explained that: "It [recycling in the community] started at the school with the children filling up bathrooms with cans and bottles." Sharon Johansen, who started the program, provided details of how it all began:

> I started the program with my first kindergarten class in September 2006. We started out within my class by making students bring beverage containers. A colleague of mine was teaching Grades 3 and 4 at the time and he joined me, and our classes started having competitions that grew within our elementary school (…). I had another colleague join to help with whatever was needed. First, I showed her a video that I watched while working in the Cultural Centre about a lady who lived in a small community, I believe it was Gibsons, BC, who started recycling in her community all on her own. I thought if she could do it, I can do it as well (…). We continued throughout the school and it [the program] got bigger and bigger.

3.3 Education and Training Received by School Children

Kindergarten school children and their Grades 3 and 4 counterparts who were involved in the program were taught about waste diversion programs, such as recycling, composting, and reuse by the teachers who spearheaded the program. The goal of the program was to empower the students to understand these concepts, participate in programs and initiatives, and spread or promote these programs and practices within their households and the community at large. The education provided by the teachers was not only based in the classroom, but also included involving students in community cleanups, learning about waste management from professionals in waste management and environment fields, as well as waste minimization and prevention brainstorming activities.

Weekly community cleanups were organized that involved teachers leading students out in identified areas in the community to pick up garbage or co-mingled waste and recyclables, such as plastic bottles and cans. Students used protective gloves, recycling bags, and black garbage bags were distributed to students during the cleanups. The purpose of involving students in community cleanups was for them to learn on the land and to continue to teach them about the Heiltsuk Nation's Gvi'las—the traditional teachings of values that have been passed down from one generation to another and continue to be held. The Gvi'las at play, in this case, is respecting and protecting the land or environment by keeping it clean from waste and pollution.

In addition to the community cleanups, there are environmentalists that share their expertise about environmental issues, including waste management with students during Ocean Day celebrations held on June 8 of every year. Several information booths or stations are mounted at various points close to the ocean by the professionals. While the Ocean Day celebration is open to everyone in the community, students who were part of the recycling program were led by their teachers in groups to visit the information booths, where the professionals share information about the ocean and the environment in general. Examples of topics that have been discussed include the impacts of toxic substances released into the ocean, the effects of plastics in the ocean, and what the community can do to

prevent plastics from entering the ocean. Posters and photos are examples of materials that are often used by these professionals to explain these environmental challenges. The teachers believed that having professionals present information to students made a bigger impact on students. Additionally, during Earth Day fairs, environmental professionals provide education about various aspects of the environment to students on a host of topics, including solid waste. For example, Pacific Wild, an environmental organization that supports ecosystem protection, is an organization that has shared information with community members in Heiltsuk Nation, including students.

When the community fully rolled out its compost program in 2013, students were taken to the compost site to learn about the importance of compost, how to make compost, and the importance of composting to gardening in the community, among others. The attendant at the compost site had a tour with the students and explained the process involved in composting and what the compost can be used for. The hands-on knowledge gained through this experience was applied to the school's compost program with the help of teachers. For example, teachers designed a routine where students emptied compost bowls from their classroom into the school's compost bins every afternoon. To make the activity fun, in one of the classes, a teacher appointed a *star helper* who would choose two classmates to go with them to empty compost bins daily. Students enjoyed doing this, and the activity became part of their daily routines in school.

Teachers engaged students in brainstorming activities, where they explored items that were appropriate to recycle and those that did not belong in recycling bins. The teachers usually made a list of several items on a flipchart and asked students to identify which ones were recyclable and which were not. Utilizing the knowledge gained from the teachers and professionals, students were able to go through the list and successfully identify recyclable and non-recyclable materials. In some classes, students made crafts out of recyclables. Similar brainstorming activities were undertaken following the visit to the community's compost facility, and some classrooms had compost buckets/bins for students to participate in composting. This was done to ensure students were properly applying what they had learned about composting.

3.4 Action on Proper Solid Waste Management from Students

Teachers tasked students to bring as many recyclables to school as they could find. This created a friendly competition among students and motivated them to participate in the program. As P9 noted:

> The recyclable collection was in the form of a competition among the students when we started. So, we could say for this week, let us see who brings in the most milk jugs. They [students] did not get big prizes, just things like a little toy. That helped them to see that we do not need to have so much waste in the community. The goal was for the students to talk with their parents and people in the community. (P9).

P21 further added that "(…) With the money that we raised from the recycling beverages, we used it to buy door prizes that were environmentally friendly, for example, reusable water bottles and reusable grocery bags."

In addition to the recycling competition, students spoke about waste management in community gatherings and at events, such as the Earth Day fair described above. Explaining in detail how children embarked on community education, P21 explained that:

> We would host annual Earth Day fairs to start educating the community. We would host different events at the fair. We started by asking the community for donations for a free table at the fair. The free store table was always the greatest hit, and it helped others within the community. We even asked the band store manager for a bundle of paper bags and the children would decorate them by advertising different ways to help save the environment, for example, by recycling and reusing bags. These were displayed at the fairs and explained to the community by the students. We had another table where they [children] would be planting different seeds to bring home and grow their own food (…). We had a big section on reusable books as well.

In addition to the above, students made educational videos on recycling, reuse, and composting, which were played in, for example, the Waglisla Band Store—the community's band store. According to P7, "The school has done a video on recycling (…). It was great when the school made those instructional videos on how to recycle (…)." Teachers also endeavoured to share the instructional video with the parents and guardians of the students. Students also embarked on a campaign to promote the use of paper bags in the community. This initiative was supported by the manager of the community's band store.

Additionally, P21 explained that "We had videos playing on screens about how plastic bags impacted the environment. Over the years, we incorporated composting videos and educated the community on how to compost." According to P9:

> As we taught the students, they went home and taught those in their households, which was the idea. We made educational and informational videos with the students on how to compost, recycle, and reuse materials when social media was catching on. When we got the red and blue bins, the students made a little video about that for the community, including what goes into each bin and how to wash them. This was about 5 or 6 years ago, and that was when the free store was up and running.

The Heiltsuk Nation is an island community, and one challenge to the program was how to get the collected recyclables out of the community. This resulted in an arrangement with *Port Hardy Builders* to backhaul recyclables collected in the program.

> At that time, Port Hardy Builders, a hardware store in Port Hardy, was shipping materials up here weekly because of ongoing community projects and they agreed to take the recycling with them on an empty truck back to Port Hardy. The proceeds from the returns basically covered the program. We had a can crusher, so we crushed cans and the students helped with bagging them up. We sent them out. (P9).

P21 added that:

> (…) When we did the beverage container competitions, we were supported by the former workers at public works. We were also supported by Port Hardy Builders. They provided us with a flat deck truck to put the beverage containers on them, and we shipped the beverage containers to Port Hardy.

Participants involved in the program explained that they were motivated to start the program in the school because of concerns for the environment:

> Everyone involved was environment-minded and aware that we lived in a community that did not have recycling. Also, because our garbage was burned at the time and, with the wind blowing, you could smell the bad odour of plastics and other waste. We have had a big litter problem in the community, so we were helping the students to be aware of that. It was mainly the environmental perspective and getting the students to be aware of the issues (…). We focused on the students because things catch on with youth more quickly than adults, and they are in the same place at school. Recycling generally was not happening at home, so the students were not learning about it. Some families collected their recycling and took it down to Vancouver, but it was not organized within the community. (P9).

The decision to educate and work with students to spread education about proper waste management practices was acknowledged by the community as a clever idea. For instance, P13 reflected that:

> [Names withheld] were smart about starting the program in the school, because they utilized the children and showed the community that we impact the environment with the waste that we generate. It helped us to start sorting and separating our waste, such as plastics, cans, cardboards, etc. The depot would not take the waste if you do not separate it, and we have had to go on with the sorting and recycling. (P13)

3.5 Impact of Children's Actions in Households and on the Community

Throughout the interviews, participants mentioned that they and other community members have benefited from the knowledge the children gained from being educated about proper waste management practices. Most participants only started to recycle when the children came home to show them how to properly recycle. As P3 explained:

> I came to this point of recycling and composting when my daughter started talking about it, because she did research and when she came home, she talked to me about it. Here is my daughter, who is educating and talking to me about all these and, for it to be a reality, I was happy. The young ones were given the task and here we are [recycling].

Similarly, P13 mentioned that:

> My daughter encouraged us to participate in recycling, because she was on board. She asked what will happen to my children and grandchildren if we do not recycle and continue to negatively impact the environment with our waste. After that, we started getting on board [to recycle and compost].

For some participants, their grandchildren were the ones who taught them about recycling and composting, what needs to be disposed of in bins, and how to properly recycle items. Describing how they got involved in recycling and composting, P4 recounted that:

> My granddaughter, who was four years old at the time, caused this change [recycling and composting] in me, because she will say you do not put the bottles in the garbage but into the recycling. [She said] you put food waste in the compost bucket, and she showed me how to do that. And she was only four years old! (P4).

Another grandparent, P5, reported that, "They taught the children in school, and it was them that came home to teach me. They came home and said 'grandma, you have to recycle, compost, and do all of that." P11 summarized the program and the impact the children have had on the community in the following words:

> It was the children, through the school, that started the whole process of recycling and championed it. That resulted in pressure on parents [to recycle and compost at home] and created societal change (…). I am grateful to our children for pushing us to recycle and compost and to reduce our waste in the community.

For their part, P20 expressed gratitude to the community and reiterated the importance of protecting the land from waste through recycling, given that ancestors of the Heiltsuk Nation have always protected the land from pollution:

> I think they [community] did well [with the program] considering that the children were the ones that were bringing home the information and teaching them. I heard a lot of mumbling about how much work it was to recycle because they had to rinse containers or crush plastics, etc. I always stressed to community members that our ancestors looked after the environment for us, so why can't we look after it for our future generations.

Despite the impacts and influence that students have had on recycling in the community and the elementary school, recycling in the school is not as vibrant as it used to be. Explaining the current fall in recycling among students, P9 revealed that:

> Some students recycle, and others do not. It really depends on the class. For some classes, the teachers put out recycling bins and, in some, that does not happen. There is not an overall involvement or coordination as there was in the past. There is high teacher turnover in the school, so we need someone to be here to keep advising people. [Name withheld] used to give information to the teachers at the beginning of each year (...). She was always the lead on recycling in the school, and it is harder as new teachers come in who are not aware of the community recycling program. I think the main thing is getting a good system for workers to pick up the recycling, and we have not had consistent education for the students for some time now.

The lead author also confirmed that the current status of the recycling program in the school pales in comparison to what it used to be in the past and that there were no signs of reviving the program for students as previously done. However, the school was still involved in the community's recycling program, which some participants, as noted above, emphasized that the school's program helped establish.

4.0 Discussion

The data suggests that when directly involved in recycling programs at school, students pass their knowledge to immediate family members (e.g., parents and grandparents) and community members, which influences the latter to participate in recycling programs. This change in attitudes and behaviours among community members was achieved through children providing direct information and education to members of their households on proper recycling and composting practices; promoting waste reduction and reuse during the celebration of community events, such as Earth Day fairs; and creating informational videos on how to recycle, compost, and reuse waste materials. The students, who did not know about recycling prior to getting involved in their school's recycling program, learned about recycling, composting, and reuse from their teachers through hands-on education provided by environmental professionals, brainstorming exercises, and participating in community cleanups. These shaped their thinking about, and interest in, recycling.

The finding on children learning about recycling and making an impact in their homes is consistent with that of Grodzínska-Jurczak et al. (2003) and Maddox et al. (2011), who also found that children influenced their households regarding waste management by sharing information and initiating conversations on the topic. More specifically, Maddox et al. (2011) concluded that school-based waste education is important because it:

> (…) can play a key role in developing children's knowledge about sustainable waste management but, more importantly, in ensuring that the message initially delivered in school is taken home, with the result that waste management in children's homes becomes more sustainable (p. 2597).

In a First Nations context, McGregor (2010) also reported that the Earth Keepers program, which aimed at building capacities of First Nations to develop waste management plans, involved children so that they could learn about waste management and pass their knowledge to other community members.

A key reason for starting the recycling program in the elementary school was the need for change at the individual/household level in a community that burned, buried, and transported its MSW waste beyond Canada's borders to the United States at the time. In fact, the practice of open-air burning or burying co-mingled waste has been found to be very common among many Indigenous and isolated communities in Canada (Oyegunle & Thompson, 2018; Oceans North, 2021), and the practice continues in some communities, primarily because of the lack of infrastructure, facilities, and waste diversion programs (Keske et al., 2018; Assuah & Sinclair, 2021). Given the isolated nature of the community, which is bounded by an ocean and without a landfill, a recycling program seemed an effective approach to mitigate the effects of increasing waste generation due to packaged food being barged or shipped into the community. Reducing waste generation through recycling and composting are also preferred MSW management methods on the zero-waste hierarchy (Zero Waste International, n.d.).

The program was successful and had its desired impact—children influencing members of their households and community members—because it was well-received by the community. This is because school children were involved, and community members wanted to show their support for the children, as indicated by participants. This is in line with the argument of some authors (e.g., Hoover-Dempsey et al., 2005; Green et al., 2007), who suggest that parents will be involved in activities of their children because they want them to succeed and, in our case, this support extended beyond parents and immediate family relations to the community. Consequently, community members learned about the importance of recycling and composting, items that can and cannot be recycled and composted, and how to properly recycle and compost food waste.

It is worth noting that the "healthy" recycling competition among students that rewarded them was a source of motivation for students to do more and participate in the programs, hence contributing to the program's success. This finding reveals that extrinsic motivations can result in students participating in EE programs.

The set-up of the program, which involved students learning from the outdoors by participating in community cleanups and Earth Day fairs, is characteristic of Indigenous land-based learning, which is a culturally appropriate way to learn about,

and reconnect with, the land (Ritchie et al., 2015; Johnson & Ali, 2020). The source of knowledge for most Indigenous cultures is the land, with which they have an inseparable relationship (McGregor, 2020). However, settler colonization has denied Indigenous Peoples the opportunity to learn from and continue with this sacred relationship with the land (Frideres, 2020). As a result, the need to reconnect with the land through land-based learning programs cannot be overstated within the lens of decolonization and reconciliation. To this end, Wildcat et al. (2014, p. i) assert that "(…) if colonization is fundamentally about dispossessing Indigenous peoples from land, decolonization must involve forms of education that reconnect Indigenous peoples to land and the social relations, knowledges and languages that arise from the land." Involving Indigenous K-12 students in the recycling program is one way that teachers in the school were reconnecting students with the land, and it is an approach that other Indigenous communities can emulate to help protect the environment and deal with challenges they face with MSW.

Although capacity is a major challenge in many Indigenous communities (Standing Senate Committee on Aboriginal Peoples, 2007; Nelson, 2019) and employee turnover tends to be high, the teachers acted as community champions to initiate and lead the recycling program in the school. Community champions are important in spearheading initiatives, creating support networks, and bringing about change in communities (Lassa, 2019; Lindsay et al., 2019). Given the enormous challenges that Indigenous communities in Canada face with MSW management, having community members volunteer as community champions to lead waste diversion projects and programs can be important in dealing with the challenge. Moreover, as our data reveals, having a school program by community champions can be one sure way of dealing with MSW management in communities. This is because children, at an early school age, begin to define and develop consciousness about the environment as well as their responsibilities, which shape their attitudes and values about the environment (Bryant & Hungerford, 1977). The values children develop can therefore be important for their environmental consciousness and, in this context, MSW management awareness in the later years of their lives.

However, the current lack of vitality of the program following the departure of the teacher who started it points to capacity challenges and a lack of succession planning by the school and teachers involved in the program. The lack of program continuity stifled the education that was happening in the community, because MSW management requires consistent and continuous education and information sharing to elicit positive attitudes and behaviours and to keep up to date with new management practices and changes to policy and programs. As a result, the school and the community at large should consider reviving the school's recycling program to its former state to help spread awareness, information, and knowledge about positive MSW management attitudes and behaviours. Continuous spreading of information and awareness is even more important with the already established community-wide recycling, composting, reuse, and co-mingled waste pick-up programs.

5.0 Conclusions and Recommendations

This research examined whether the recycling attitudes and behaviours of adults in a remote and isolated First Nations community in British Columbia—Heiltsuk Nation (Bella Bella)—changed after K-12 students who learned about recycling in school passed on their knowledge to them. Our analysis of community members' perspectives showed that they learned how to recycle, compost, and reduce their

waste when students brought back information from school and showed them how to recycle properly. With the knowledge gained, those that received the education and information started recycling, composting, and reusing waste materials. This was at a time when there was no community-wide recycling program, and the community was burning, burying, and transporting MSW to the United States. The foregoing shows that in a First Nations context, in which Elders and adults typically transfer their environmental knowledge to the younger generation, students and young people can also influence adults to act by transmitting their environmental knowledge to them. As such, First Nations communities seeking to start recycling programs can build programs around elementary students to encourage information sharing and spur change in the community. It is important, however, that attention is given to community-specific factors in developing the programs.

Given that studies on the intergenerational transfer of environmental knowledge from children to adults have often been within non-Indigenous contexts, this research advances its understanding in an Indigenous setting. The data, thus, suggests that theoretically, intergenerational transfer of environmental knowledge in Indigenous communities is not different from non-Indigenous communities despite cultural differences.

Students were able to change the attitudes and behaviours of community members through one-on-one conversations with family members such as parents and grandparents, information sharing and education of community members, and producing and circulating instructional videos on recycling, reuse, and composting. Given that recycling was not pervasive in the community at the time, teachers taught children about recycling, composting, and reuse by using in-class brainstorming activities, engaging students in community cleanups, and utilizing environmental professionals. That is to say that the school recycling program would not have been possible without the teachers, particularly the teacher that initiated the program. We, therefore, conclude that finding or having community champions who are dedicated to leading waste diversion initiatives in First Nations should be prioritized when planning and developing initiatives in communities, because they are facilitators of change. Additionally, environmental education practitioners should structure and introduce children to a variety of programs and activities in and outside of the classroom to enlarge their scope and broaden their thinking.

Further to the above, setting a clear program goal, providing multiple avenues for students to learn and share their knowledge and community acceptance were important aspects of the program's success. To this end, environmental educators should be intentional about setting their program goals and working to achieve them. However, these factors need to be further researched to firmly establish them, because determining elements that can help or hinder designing and implementing elementary school recycling programs will provide communities with "rich" information regarding what they need to include and avoid in their programs. This is important because many First Nations or Indigenous communities lack waste diversion programs, and a lack of "best practices" to direct action could demotivate the start of programs.

The data is clear that building a program mainly around one person negatively affects the program's impact in the long term, because a lot of time, energy, and resources need to be invested. This explains the reason the program is not vibrant now compared to when the teacher who initiated it was still in the community. Thus, there was decreased amount of time, energy, and drive after the initiator of the

program left the school and community. As such, careful succession planning is recommended to help abate the impact of such situations, as well as deal with the effects of inadequate capacity in First Nations.

Although our work provides evidence of children influencing adults' environmental attitudes and behaviours in an Indigenous or First Nations setting, more research is needed in this area/field of inquiry. Having a multiplicity of data about children-to-adults environmental knowledge transfer to draw on could help change MSW management approaches in rural and remote First Nations, particularly those that struggle with management and lack programs. Future research should also explore the importance and role of cultural factors in environmental knowledge transfer from children to adults, as well as the effects of how children-to-adults environmental knowledge transfer can impact the culture of First Nations.

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