



Children's Concepts of the Environment: An Opportunity for Environmental Education as a Tool for Sustainability in Botswana Preschools

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Abstract

The role of environmental education as a vehicle for sustainability in Early Childhood Education is an under researched area in the global south, when compared with the global north. In spite of the fragmented approaches that have been used globally, and recent initiatives by UNESCO through its advocacy, there is very little evidence of action in this area in African countries like Botswana. Specifically, research and theorising to support advocacy and uptake of environmental education as a tool for Sustainable Education in early childhood is lacking or emergent, at best. For the preschool child as a learner who has the right to be involved in issues that concern life here, now and in the future, this research draws on a global research where young children have been shown to possess knowledge about the earth, clear thoughts about environmental issues, the responsibility people carry, and ideas about what to do about environmental issues. It is imperative to contextualize knowledge, thoughts, and ideas in varying specific contexts, such as in Botswana, where culturally, voices of children have quite often been stifled. Henceforth, this research sought to highlight preschool children's concepts about the environment, specifically through their expressions on the state of the environment in Botswana. Botswana preschool children's comments on the state of the environment were solicited using a baseline scan of a picture of the globe drawn from OMEP's global research showing young children cleaning the earth. Drawing on Critical Discourse Analysis (CDA), the research considers how these children's interpretations are influenced by their contextual discourses emanating from their conceptions of their environment and experiences. The research further revealed that when given the opportunity to talk freely about what they saw in the picture and their interpretations of the image, the children's concepts provided a good basis for understanding their experiences relating to the state of the environment in their local contexts. The concepts that they hold can give cues about strategies that can be employed to integrate environmental education as a tool for sustainability education to meet the 2030 ESD agenda in Botswana's pre-school education.

Keywords Pre-school children · Environmental education · Education for sustainable development

Introduction

The call to have children participate in matters that affect them has added impetus to the urgency for reorienting education towards equipping young children with relevant

knowledge, skills, and values in order to respond to these challenges for their sustainable futures (Ärlemalm-Hagsér & Pramling Samuelsson, 2021; Burger, 2018; Correia et al., 2021; Engdahl & Furu, 2022; Silo, 2017). While on a global level, young children have been shown to possess knowledge and clear thoughts about environmental issues, the responsibility they carry and ideas about what to do about environmental issues (Engdahl, 2015; Engdahl & Furu, 2022), it is imperative that these thoughts and ideas be analysed within specific varying contexts. Multiple reports, especially in African countries, have shown that adults often underestimate the competencies of young children. This is particularly important because, culturally and traditionally in African countries, it is believed that

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children's behaviors and attitudes are best molded in their early childhood years; hence the saying “*lore le ojwa le sa le metsi*”, which in Botswana literally means that a tree branch can only be bent while it is still tender (Maundeni, 2002). In Africa, Botswana specifically, this belief generally operates under a traditional authoritarian context that emphasizes passivity and submissiveness for children (Maundeni, 2002). This African belief is substantiated by developmental psychology which has always emphasized that children's most significant developments occur during the early childhood years (Mustard, 2000; Rutter, 2002). Mustard (2000) and Rutter (2002) highlight that, not only is this evident from developmental psychology, but from other fields such as neuroscience, health and economics which all foreground the importance of investing early in young children for their benefit and the society.

Yet in Botswana, like in most global south countries, the early years have traditionally received the least attention from the education world (OECD, 2016). Though over the past decade there has been an increase and spread in research in the area of environmental education for sustainability education in early childhood education globally (Somerville & Williams, 2015), in Botswana, research in the field is still lacking, under-examined and under-resourced, ‘even though young children are the ones who will bear the consequences of our actions and inactions on sustainability-related issues’ (Davis, 2008, p. 18). Davis argues that young children should be seen as potentially the longest living beings, hence the ones to suffer most the worsening economic, social, and environmental conditions. This pattern of neglect highlights opportunities for more research in Botswana in the field of environmental education/education for sustainability, which is seen to be the vehicle to meet SDG 4 target 4.7:

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles.... (UNESCO, 2015).

This target speaks to the need for quality transformative education that will respond to the 17 SDGs and make an impact on our society which has seen a rise in the sustainability issues encapsulated in these goals (Engdahl & Furu, 2022). Indeed, research shows the value of quality early childhood education (ECE) for the development of competent children who can take responsibility for issues in their immediate environments (Engdahl & Furu, 2022; Espinoza, 2002; Friendly & Browne, 2002; Shonkoff & Phillips, 2000). All these authors also recognize that ECE delivers positive benefits to societies beyond immediate personal interests when investments are recognized as public rather than private.

Environmental Education in Early Childhood Education in Botswana

Unlike many developed nations of the global north, Botswana ECE does not seem to prepare young children to acquire the skills, attitudes, and active participation needed in society Mswela (2019). This is a result of a highly traditional African culture that has shown that adults often underestimate the competencies of young children in Botswana (National Curriculum Framework, 2015). The national curriculum framework therefore needs to clarify the concept of quality education in order to recognize the current environmental and sustainability needs of the society. Environmental and social challenges need to be incorporated within early childhood education, so as to develop well-educated children who will have the needed knowledge, skills, attitudes, and national pride, and be able to participate in the contemporary society in a positive manner (National Curriculum Framework, 2015).

A well-maintained environment set up for children is an important element of any ECE program. Children need to be aware that a favourable conducive environment is a very important aspect for their learning. They need to distinguish an environment that is well maintained and free from any hazardous factors for optimum learning (Hearron & Hildebrand, 2011). The Early Childhood Care and Education Policy (ECCE) of 2001 states that both outdoor and indoor environments should be safe for children at all times (ECCE, 2001, p. 24). Recognizing that the early years of children are the most significant period of growth and development, it becomes imperative that practitioners and researchers in Botswana begin to plan, develop, and implement early childhood programmes with aspects of environmental education and a focus on sustainability. Among the key objectives of environmental education are awareness, knowledge, attitude, skills, and participation; all continuing themes in the development of the field of environmental education (Gough & Gough, 2010). From the decade of education for sustainability, the scope of environmental education has shifted focus from the biophysical environment to the total environment that embraces the three pillars of sustainable development: the environment, society and the economy. The emphasis on environmental education for sustainability in other parts of the world has received a lot of attention in the past few years because of a greater awareness of the need to act now in order to care for planet earth's natural resources for present and future generations (Prince, 2010, p. 425). Therefore, children need to be actively involved, both at home and at school, in sustainable practices (Ärlemalm-Hagsér & Pramling-Samuelsson, 2021; Engdahl & Furu, 2022; Prince, 2010).

Against a traditional authoritarian society like Botswana, that has emphasized child passivity and submissive behaviours (Maundeni, 2002), there is need to have teachers and parents who are physically and emotionally supportive to allow children to feel comfortable and to support free expression and interesting activities (Henniger, 2017). These authors recommend that teachers serve primarily as facilitators to children's self-initiated activities, providing open-ended opportunities for children to explore concrete materials and to interact with each other.

Framing Early Childhood Sustainability Education through Environmental Education—A Critical Discourse Analysis Approach

The United Nations Convention on the Rights of the Child (UNCRC, 2004) has been instrumental in setting a global agenda for raising awareness about children and actively encouraging an increase in children's participation in democratic societies; placing an emphasis on children's involvement in environmental decision-making (Barratt-Hacking et al., 2007, p. 531). A Critical Discourse Analysis (CDA) analytical approach can provide an analysis of discourses in preschool children's voices through analysing themes, concepts, words, ideas and frames linked to the environment against power relations present in the Botswana authoritarian culture so as to understand the representations of their thoughts and ideas (Fairclough, 2013; Krieg, 2017). According to Fairclough (2013), CDA is a well-suited approach for this context because it problematizes discourse assumptions, strategies, and claims to authority. CDA experts argue that subtle and less evident meanings need to be exposed, since they are expressed covertly which making them elusive of being challenged (Fairclough, 2013; Krieg, 2017; Wodak & Meyer, 2001). This is particularly relevant in authoritarian cultures as is the case in the context of this study. CDA makes it possible to challenge power relations that tend to be hidden in texts, so as to empower or emancipate people, in this case pre-school children (Wodak & Meyer, 2001).

With children in sub-Saharan countries like Botswana constituting nearly half the population, they are already faced with the task of the responsibility of looking after their environment. As such their involvement in participatory processes in issues relating to the environment are quite key in order to safeguard the future sustainability of any actions taken to improve the environment (Engdahl, 2015; Engdahl & Furu, 2022). Article 12 of the UNCRC challenges states to consider children as citizens with both the capacity and the right to agency and participation, as a fundamental right of all children, which in essence has now gained recognition in different areas of knowledge and increased visibility

in society (Burger, 2018; Correia et al., 2021; Lansdown, 2005). This view stands in contrast to the view of children and young people as simply awaiting transformation into mature, rational and competent adults (Greene & Hogan, 2006). Correia et al. (2021), Burger (2018) and Lansdown (2005) argue that adults can only act to facilitate children's participation and meet their needs if they know and understand what is happening in children's lives and that only children can provide that information. CDA, therefore, is a tool that can make these perspectives and information visible, in an effort to respond to environmental challenges. The intention of this study was to obtain children's views about the above-mentioned picture of the earth. The CDA approach makes it possible to unpack the somewhat vague conceptualisations of the state of the earth by children within text (Fairclough, 2013; Krieg, 2017).

Drawing on the CDA methodological approach, this article points to the fact that children have certain rights, such as to express their views, to be listened to, and to participate and be involved in decision-making in issues that relate to them (Davis, 2014). The study is, therefore, theoretically framed around CDA due to its flexibility to engage children and uncover discourses hidden in their interpretations of the picture of the earth that they were made to analyse. The aim of CDA is to provide a means to analyse texts by examining how the linguistic resources are used enact particular functions (Krieg, 2017). A key challenge that emerges in using this approach then, is to know whether and how we can best identify the opportunities that can enable and facilitate children's participation through voicing their ideas and concepts so that the principles and prospects, as espoused in Article 12 are meaningful, relevant and important to the everyday lived experience of children in their contexts, for their own welfare and that of the environment in which they grow. However, as Fairclough (2013) and Wood (2020) contend, CDA offers methodological means for identifying ideological assumptions, power and the effects of power, specifically what counts as valued or legitimate knowledge, and from whose perspectives (Wood, 2020, p. 325). Therefore it means that how learning can be made sustainable for children, and what they learn about the environment around them should be the issue of utmost importance and addressed seriously (Siraj-Blatchford et al., 2016).

According to the UN 2030 agenda for sustainable development, one aspect of learning for future generations is to develop ESD skills in children while they are still very young (UNESCO, 2015). Some of the skills required for the children's education are life and lifestyle skills, problem-solving skills, innovation skills and citizenship skills. The SDG Development Report (United Nations, 2016) argues that quality education, which should start at early childhood, fosters the acquisition of the foundational skills that serve as building blocks for further learning in children's analytical,

problem-solving, and other high-level cognitive and social skills that they can use in the context of the prevailing challenges in their environments. These ESD skills go on further to develop children's values and attitudes that can enable them to be citizens that can make meaning of what it means to live their lives in a healthy environment (Ärlemalm-Hagsér & Pramling-Samuelsson, 2021; Pramling-Samuelsson & Park, 2017). Above all, to accomplish this, there needs to be opportunities created for children to express their views to make meaning of their own experiences. When children can create their own meaning instead of merely repeating what someone has told them, as is the norm in Botswana knowledge based teaching, 'knowledge becomes integrated with their emotions and, as a result, children own that knowledge' (Pramling et al., 2017, p. 278).

In order to understand children's meaning-making, Sommer et al. (2013) argue that children's thoughts, accounts and ideas linked to their daily lives should be collected to get a child-oriented perspective. It is the duty of adults to pay attention and understand the children's perceptions, experiences and actions to gain insight into their worlds (Ärlemalm-Hagsér & Pramling-Samuelsson, 2021; Engdahl, 2015; Engdahl & Furu, 2022; Pramling & Pramling-Samuelsson, 2011; Sommer et al., 2013). Listening, observing and analysing these children's perspectives will assist teachers and parents to understand how children make sense of the environment in which they live (Engdahl, 2015). Kjörholt (2012) contends that children are influenced by their surrounding and they are able to interpret, reproduce and also produce their own culture from that environment. By hearing children's voices and concepts, James (2004) argues that this provides a theoretical concept which includes: '... that cluster of intentions, hopes, grievances, and expectations that children guard as their own and that only surfaces when the adults have learned to ask and get out of the way' (p. 8). Henceforth, using the CDA approach of listening to children's voices, perceptions and ideas, potentially offers a window through which children can be agents of change in influencing their contribution to responding to sustainability issues that continue to emerge within their environment (Engdahl, 2015; Engdahl & Furu, 2022).

It is within these theoretical perspectives that this paper seeks to highlight the importance of children's perspectives on the concept of the environment within education for sustainability in order to elevate the children's rights as citizens who should be recognised as rights' holders and rights' partakers in a broader societal perspective that also includes collective, intergenerational rights beyond those that are generally held by society (Davis, 2014), especially in traditional authoritarian societies like Botswana (Maundeni, 2002). Henceforth the intention of the study was to analyse, through their statements, children's knowledge of the environment from a picture of the earth they studied,

explain what they saw to get their perspectives and concepts of the environment and how they were able to dialogue on the issues they saw.

Methods

The study focussed on a case analysis of two preschools schools in two separate contexts in Botswana: peri-urban/rural (Pre-school 1) and urban (Pre-school 2). Case studies are studies of singularities or bounded systems which are in essence an enquiry of real-life contexts (Yin, 2018). Therefore, case study research is contextual and interpretive aimed at exploring the ways that people act in a specific, concrete field of action, why they do so, and how the situations observed may be explained (Kyburz-Graber, 2004).

The research method used included children's focus group interviews and examinations of dialogues among 4–5 year old children in groups of four to six. In each pre-school, five groups of four to six preschool children were interviewed. Focus group interviews with children are important because they offer a means to acknowledge participants and their voices, according to Hennessy & Heary (2006):

... a child participating in a focus group should not feel that he or she is being questioned by an adult but rather that he or she is sharing experiences with a group of peers (p. 239).

The focus groups were used to address the following research question: What are preschool children's concepts of the earth in the context selected environments in Botswana? The purpose behind these group interviews was to allow for discussion and dialogue on environmental issues related to the picture in the OMEP logo (OMEP, 2010), with a focus on the children's voices, ideas, and perspectives about what they saw within it. The dialogue was meant to uncover meanings attached to the inferences that may emerge from the specific contexts, discourses, and purposes, drawn from the context of what was in the picture (Hennessy & Heary, 2006). Karlsson (2001) defines dialogue as an exchange of opinions, information, ideas, and meanings, in which the purpose is learning; something that goes beyond simple utterances. He sees the discourse of dialogue as "a spontaneous movement between asking and answering questions about issues that pertain to each other's lives with the aim of establishing, maintaining or developing social contact" (p. 212), noting that dialogue should take the form of engagement that takes interlocutors beyond mere discussion characterised by a unidirectional verbal exchange.

The study took two consecutive weeks which included four to five visits per week for one hour each session. Specifically, the interviews were held in English as this is the mode of instruction in the pre-schools.

Data analysis of the focus group interviews was done through abductive content analysis (Cohen et al., 2018) within the CDA framework. The data was analyzed by using the lexical analysis form of CDA (Esquivel, 2019). Lexical analysis included the study of verbs, adjectives, nouns, etc. used in the description of the OMEP Logo picture by the children. Verbs state explicit and implicit discourses (Esquivel, 2019; Krieg, 2017). The abductive approach to analysis interprets and re-contextualizes data within pre-determined or pre-existing conceptual

frameworks in order to understand the data in a new way by observing and interpreting within the new context (Miles & Huberman, 1994). It allows themes to emerge from data through contextualising the data. Like inductive analysis, meanings are located within contexts and discourses within the purpose of the research (Hedges, 2014; Miles & Huberman, 1994). In this study, the focus group transcriptions were coded in terms of categories arising from both empirical data and from ESD theoretical frameworks used in this study.



Fig. 1 Source: OMEP (2010)

Fig. 2 Children studying the picture of the earth



Results and Findings

The study was designed to give voice to preschool children as they shared their ideas about the state of the environment from the picture they studied, with the hope of understanding the children's meaning-making of what they saw (Sommer et al., 2013). The children's responses were categorised according to emerging themes of their knowledge of the environment, their perspectives and concepts of what they saw, and how they were able to dialogue with the interviewer about the issues in the picture. (See Figs. 1 and 2). Through the CDA lexical analysis (Esquivel, 2019), verbs, nouns, and adjectives used by the children revealed the implied meanings for the observations they made of the concepts around the picture.

Children's Knowledge of the Environment

The results from the children's accounts in this section indicated that preschool children have significant knowledge about the earth and important ideas about environmental issues. This, along with knowledge of the responsibilities which individuals carry with respect to caring for the environment, are key objectives of environmental education. Some of the excerpts that illustrated this knowledge include:

It is green because it is grass and blue because it is water. (Pre-school 1)

They are cleaning the moon. (Pre-school 1)

They are cleaning the ball...eh...eh... the earth with soap and water because it was not clean. (Pre-school 1)

The earth is dirty. (Pre-school 2)

They are cleaning the ball. (Pre-school 2)

I can see boys and girls washing the ball. (Pre-school 2)

This black oil/soot is making the ball dirty. (Pre-school 2)

Adjectives associated with 'the environment' or environmental content are often difficult to identify in early childhood learning narratives. However, in this particular context, nouns like 'moon', 'grass' and 'water' indicated that the children had spatial awareness of characteristics of the physical environment. The analysis of the verbs (e.g., 'washing' or 'cleaning') and adjectives (e.g., 'dirty') used in their observations related to the state of the earth in the picture, though not explicit, indicate that the preschool children were able to express their own critical and emotional capabilities (Krieg, 2017). It was clear that the children did have some knowledge about the state of the earth by their identification of various aspects of the picture and by stating that the earth was being cleaned because it is 'dirty'. The practice of ESD at elementary schools is associated with goals of raising environmental knowledge as well as social awareness among children (Kopnina, 2012). It was apparent that the children in this study were well aware of the environmental problems reflected in the pictures and demonstrated this type of awareness and knowledge.

Children's Perspectives on the Environment

Upon being asked to explain their observations of what is going on in the picture, children's explanations and perspectives were well connected with their concrete everyday environment as, reflected in the following excerpts.

If they don't clean it well it will be very dirty and disgusting. (Preschool 1)

We can sneeze and die if it is dirty. (Preschool 1)

If they don't wash it they are going to become sick and die. (Preschool 1)

Even if you don't wash it you're, your cats, dogs, goats, cattle, house and donkey they will die. (Preschool 1)

It is going to be smelly. (Preschool 1)

The children are making it dirty everywhere. (Preschool 2)

They are cleaning this black oil ... it is going to kill animals... cats and dogs. (Preschool 2)

They are washing it together because they are friends. (Preschool 2)

They are going to get tired when they wash it alone. (Preschool 2)

Many of the verbs and nouns used by children in describing what they saw in the picture provide information regarding their views of the state of the earth. There are many verbs and nouns involving physical features with which young children are familiar within their lived contexts. The features denoted by verbs, nouns, and adjectives point to the children's contextual social situations. This can be seen, for example in the ways children explicitly described showing concern for a range of animals such as donkeys, goats, cattle, cats and dogs for peri-urban/rural pre-school, as opposed to specifically naming cats and dogs in urban preschools where the animals are mostly limited to household pets. Krieg (2017) alludes to the fact that many kinds of perceptions and activities are commonly associated with certain categories which may imply a social identity, as is the case with children in both settings. The analysis of the children's voices further reveal the children's emotional capabilities, signalled by the adjectives and verbs 'very dirty', 'trust' and 'disgusting'. The statements emphasise the children's capabilities and emotional development (Krieg, 2017).

While in cases like Botswana where children have had few opportunities to express their views and use their voices, adults may often underestimate the perspectives of the children (Maundeni, 2002). However, this study reveals that children are able to identify things that are unsustainable, and associate them with their environment, as they were able to clearly identify the causes and consequences of a bad environment. This is clearly demonstrated in the examples that they used from their own contexts.

Dialogue as a Critical Tool

From the above analysis, the importance of dialogue in learning for early childhood cannot be underestimated. In the Botswana context where dialogue is normally unidirectional, or at worst stifled due the authoritarian culture, it is crucial to guide and co-engage with children through open dialogue, with the goal that ‘children develop dispositions for learning such as curiosity, cooperation, confidence, creativity, commitment, enthusiasm, persistence, imagination and reflexivity’ (Krieg, 2017, p. 57). The analysis of the children’s ideas and language used in their concept of the earth, emphasises the importance of dialogue as a dispositional dimension of learning as it makes some of the children’s dispositions explicit (Krieg, 2017).

The children volunteered information and suggestions about the state of the earth in the picture, and also had knowledge of causes and consequences of bad environment. However, upon further probing, they seemed shy or appeared to find it difficult to give further explanations to their statements. The critical dialogue between the interviewers and children seemed to be stifled. This might be attributed to the traditional and cultural value system and the discourses that influenced the lack of open dialogue with young children in Botswana (Maundeni, 2002), a situation where children are more accustomed to learning processes which are unidirectional in an education system that is highly highly teacher directed (Mswela, 2019; NCAF, 2015). This stands in contrast to some of their counterparts in the west, where a similar study was done, but in which the children generated thoughts around their common future and showed understanding of the complexity of the problems (Engdahl, 2015; Engdahl & Furu, 2022). But like their counterparts, children in this study were quite aware of some things related to sustainable development, even without recognising the actual concept of sustainability. An important skill for both educators and researchers is the capacity to communicate with children in a way in which they are able to express their ideas and to share focus and content with the child (Ärlemalm-Hagsér & Pramling-Samuelsson, 2021; Pramling & Pramling-Samuelsson, 2011).

Discussion

This study indicates that environmental education can be used as a driver for understanding sustainability in quality early childhood education and to develop children’s action competence (Jensen, 2004; Mogensen & Schnack, 2010). As Siraj-Blatchford et al., (2016) suggest, ‘different pedagogic techniques are often required to make different

forms of knowledge, skill and understanding accessible to young children’ (p. 7). Against this backdrop and from a social justice perspective, in cultures such as the one in Botswana, ‘access’ to different forms of knowledge is particularly important for children experiencing disadvantaged social circumstances (Hilferty et al., 2010; Krieg, 2017). For example, upon opening up dialogue with the children, they felt more confident to state their views and consider changes in the environment as they studied the picture. Because children were given the chance to share their ideas with the interviewers, and saw that they were taken seriously, and they were able to suggest solutions to the problems they perceived from the picture. It became clear from this study that teachers need to take responsibility and play a supportive and active role in the children’s views. The core element in these interactions is genuine dialogue between teachers and children, with teachers playing the crucially important role of facilitator; guiding, scaffolding and supporting children’s ideas, while removing any barriers for collaboration (Jensen, 2004; Silo, 2017). Scaffolding and guiding the views and voices within the children’s ZPD is key to the expansive learning process which seeks to develop children’s confidence in stating their views and perspectives. This has implications for teacher education and also for developing a deeper understanding of teachers’ methodologies against the cultural histories of their practice.

Beyond the knowledge that the children have coherent knowledge and insight about what is happening in the environment, an opportunity exists for environmental education to be used as a cross-curricular and holistic vehicle for children to understand complex fundamental concepts of sustainability (Mogensen & Schnack, 2010). Authorizing and providing children with such opportunities is a potential means for improving educational practice in environmental education. As shown in this study, when teachers listen to, and learn from children, they can also see environmental issues and concerns from the perspectives of these (Ärlemalm-Hagsér & Pramling-Samuelsson, 2021; Engdahl, 2015; Engdahl & Furu, 2022; Pramling & Pramling-Samuelsson, 2011). It can also help teachers make related content more accessible to children. Furthermore, it can contribute to the re-conceptualization of teaching and learning in environmental education and the ways that both teachers and children view sustainability problems through collaborative processes rather than through unidirectional, teacher-directed procedures (Maundeni, 2002; Mswela, 2019; NCAF, 2015). Engaging children through this dialogical approach, as was seen in this case, introduces critical conversations into the missing perspectives of children who daily experience the effects of environmental problems they encounter. Children bring in a unique perspective on what happens in the

environment and the dynamics between their experiences, concerns and issues in their lived contexts. Excluding children's perspectives from conversations relating to the sustainability issues that affect them, and from environmental education processes, provides an incomplete picture of educational curricula reform in schools in Botswana (Mswela, 2019; NCAF, 2015). It excludes how the children's lives could be improved through the reform initiative for empowerment and agency for active citizenship, human rights and societal change, all of which are components of ESD as espoused in the declaration of UNESCO UN ESD 2030 Agenda (UNESCO, 2015).

Preschool children who have the right to be involved in issues that concern their lives here, now, and in the future, can be engaged through environmental education to enhance the awareness of sustainability issues in early childhood education programs in Botswana preschools with a special focus on a child-oriented perspectives (Ärlemalm-Hagsér & Pramling Samuelsson, 2021; Engdahl, 2015; Engdahl & Furu, 2022). This can be achieved through collectively developing a curriculum that takes into consideration cultural identities within the social and ecological everyday life contexts of children (Ärlemalm-Hagsér & Pramling-Samuelsson, 2021; Engdahl, 2015; Engdahl & Furu, 2022). This can be extended to include the involvement of children's families and the broader community to engage children in sustainability projects where, through methodologies such as CDA, children's voices can be analysed to better understand issues that directly reflect on their lives as valued thinkers, empowered problem-solvers, and agents of change (Davis, 2015; Davis & Elliott, 2014). The study provides an opportunity for teachers and curriculum developers to develop successful ways of designing methodologies that probe children's views using environmental education as a driver for ESD in Early Childhood Education to enact learner-oriented curriculum activities, opposed to relying on a knowledge transmission model (Inoue, 2014; Mswela, 2019). Teachers could play important roles in scaffolding, supporting, and expanding the children's ZPD through collaboration and dialogue (Silo, 2017); critical components of working with the children to develop their critical reflective explanations, perspective, visions, and solutions to the identified problems (Jensen, 2004; Krieg, 2017; Silo, 2017). The other crucial aspect is for teachers to facilitate dialogue between children and themselves by continuously soliciting support from adults such as parents and other stakeholders to support the children's learning process. Dialogue, in the form of scaffolded oral discourse, has proved to be an indispensable mediational means, both coordinating the joint activity among children themselves and between children and their teachers (Silo, 2017).

Conclusion

The study revealed that preschool children in Botswana have knowledge about environmental issues as well as insights into causes and consequences of the problems related to the environment. Their seemingly limited lack of critical reflection and engagement with their thoughts, which may have been due to the historically embedded contexts related to the authoritarian culture in Botswana schools (Silo, 2017), provides a motivational foundation from which teachers can open a critical dialogue with children and accord children the right to express themselves. As Krieg (2017) suggests, "CDA enables early childhood educators to re-examine young children's learning in multiple ways from different perspectives and that the theoretical and analytic tools made available in CDA enable early childhood educators to see practice differently" (p. 59). Environmental education in Botswana, therefore offers an opportunity to develop methodologies which engage children through creating enabling scaffolding mediational tools, as well as opportunities and conditions that will equip children with the necessary skills to contribute as full participants in forms that will develop their capabilities to fully conceptualize and respond to the sustainability issues they confront now and in their future lives. Meier and Sisk-Hilton (2017) provide a relevant argument and solution for various ECE contexts (particularly the African context) and contend that with the current expansion in ECE programs at a time when issues related to planetary sustainability are gaining attention, the critical role played by environmental education in pre-service and in-service early childhood teacher education cannot be overemphasized as a tool to achieving high quality ESD as envisioned by SDG4.

Children in this study, as the future citizens of Botswana, should be equipped with the requisite participatory and civic skills that will enable them to take full responsibility over sustainability issues that daily confront them as individuals within the cultural context of their school and in their local communities and indeed as part of their global citizenry. This study has shown that this also involves the critical critique of history and culture. The processes of including children's perspectives more fully in environmental education discourses and practices provides a rich terrain for further research.

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