Environmental Education in India: Constructing Environmental Citizens through Narratives of Optimism

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Indian Narratives of Environmental Citizenship

Environmental education (EE) programs, wherever they exist, create narratives of value and meaning. Through deliberate choice of topics, perspectives, and approaches to teaching, environmental educators construct a story about nature and human relations to it, presenting an ideal image of what it means to be an environmental citizen. Educators make choices about the intended audience for their programs, and they create expectations for behavioral change through program design. Narratives commonly aim to instruct, convey truths and values about a culture, encourage action, and legitimize behavior (Foss, 2009). By examining the rhetorical construction of the environmental citizen through an in-depth analysis of EE programs at key sites in India, we can better understand how the practitioners understand the process of social change required to ultimately address critical environmental challenges. Furthermore, patterns of both topical emphasis and pedagogical strategy can illuminate the extent to which programs in India fulfill the widely accepted four-point framework for effective EE. India's narrative of environmental citizenship can then be placed in the context of international critiques of EE.

India is the second largest country in the world in terms of population. With the second fastest growing economy in the world, India is expected to become one of the top three economic powers over the next several decades, positioning it as an economic powerhouse with mounting global influence. GDP in India increased 7.2% in 2017-18 and is expected to reach US $6 trillion by 2030. Currently, 30% of the country's energy is from non-fossil fuel sources and that is expected to rise to 40% in the next twelve years. India is also a major consumer economy due to the rise of a strong middle class and is expected to become the second largest economy in terms of purchasing power parity by 2040, according to Pricewaterhouse Coopers (India Brand Equity Foundation, 2019).

Despite positive economic growth and a central government pushing renewable energy, India is fraught with environmental woes. South Asia is home to four of the most polluted countries in the world, including India. India boasts eleven of the twelve cities with the highest amount of small particulate matter in the air, according to the World Health Organization. Air pollution in the Gangetic Plain is said to reduce life expectancy by more than 10 years (D'Ambrogio, 2019).Two-thirds of the population

of India live in rural areas, and roughly 790 million people still use biomass (wood, charcoal, dung) for cooking fuel. India faces critical water shortages, with 600 million people experiencing severe water stress and 200,000 deaths from water related illness each year (D'Ambrogio, 2019).

India is also tasked with protecting some of the world's most iconic megafauna, such as the Bengal tiger and the Asian elephant. According to the United Nations Development Programme (UNDP), "India is one of 17 mega-biodiverse countries in the world. With only 2.4 percent of the earth's land area, it accounts for 7-8 percent of the world's recorded species. Home to 96,000 species of animals, 47,000 species of plants and nearly half the world's aquatic plants, India's management of its natural resources is crucial to protecting global biodiversity" (UNDP, 2018).

In tandem with these environmental problems, India faces the daunting task of providing sustainable development for its large population, eradicating hunger and poor health, providing livelihoods, education, shelter and healthcare to 1.3 billion people. It is this combination of pressing human needs with critical environmental challenges that makes India a particularly interesting and informative case study in EE. India cannot afford the myopic focus on species preservation or on affective connection with nature to the neglect of human systems and human-environment relationships that has characterized some western EE spheres (Cronon, 1996; Chapin, 2004). Since its inception, EE in India has been inseparably linked to development. Indeed, the Ahmedabad Declaration on Education for Sustainable Development was produced at an international conference hosted by the government of India in Gujarat. The declaration is the leading document inspiring the growth of education for sustainable development at the global scale.

Environmental Education Background

Environmental education's roots were established at 1972 at the UN Conference on the Human Environment, during which 24 principles were developed to facilitate environmental sustainability, with 19 principles highlighting the need for EE from all ages and all education levels (Stockholm, 1972). The major tenants of EE --promoting awareness, building understanding, improving skills and promoting behavior change to address environmental issues --were agreed upon in the Belgrade Charter, during the first International Workshop on Environmental Education (UNESCO-UNEP, 1976). Two years later, the Belgrade Charter was confirmed by, and built upon by the Tbilisi Declaration. Specifically, the declaration called for an increased focus on development of EE at non-formal locations such as zoos, parks and aquariums (McKeown & Hopkins, 2003; Authors, 2018).

While environmental educators as a whole agree that EE should lead to behavior change to alleviate environmental problems, scholars continue to debate how educators should

engage individuals in EE (Lucas, 1980; Jickling & Spork, 1998; Robottom, 2007) and how change ought to be achieved. Part of the debate focuses on three threads of EE: education *in* the environment, education *about* the environment, and education *for* the environment (Palmer 1998). Education *about* the environment focuses on enhancing knowledge and skills required for understanding the nature of an environment. In contrast to education *about* the environment, education *for* the environment seeks to develop affective and cognitive dispositions toward the environmental issues to promote environmentally responsible behavior (Lucas, 1979). Education *in* the environment, also referred to as education *from* the environment, is a pedagogy in which all EE occurs in nature (Lucas, 1980). These threads of EE can be woven together into different combinations (Lucas, 1980).

There is disagreement about whether EE should include collective advocacy on behalf of the environment or a more individual approach based on developing environmental ethics and values (Kopnina, 2014) and strengthening scientific facts (Hart et al., 1999). Some scholars have argued that EE's focus on how individuals might alter their conduct to enhance the health of the environment, such as reducing water and energy use, avoiding littering, and recycling, does not go far enough. Clover et al. (2000) argue that EE programs have paid scant attention to large-scale, global systems that perpetuate an entrenched and destructive human and nature relationship, and to collective action to address environmental issues. One task for educators is to engage the complexities of a global consumer society more fully, and how individuals and communities might challenge its assumptions and values.

New opportunities for educators to engage human systems have arisen through a growing focus on both climate change education and education for sustainable development. Climate change education expands the scope of EE to a greater focus on human agency and human causes of degradation and often includes positive empowerment through building adaptive capacity and resilience in threatened communities. Similarly, education for sustainable development includes a focus on the intersection of socioeconomic and environmental issues, thus expanding EE's attention to complex systems (Ramadoss & Poyya Moli, 2011). Furthermore, scholars have emphasized that systemic thinking is indispensable in analysis of multifaceted environmental problems. Popularly labeled "wicked problems," challenges such as global climate change cannot be understood without a deep analysis of large scale economic and political processes which frame decision-making. Through programs incorporating governance, economic systems and the role of the individual and community in systemic change, individuals can be empowered to participate in decision making, and facilitate large scale change (Sauvé, 2005). Debates about how such change occurs continue in the field, however. Shove (2010) calls attention to the limitations of theories based on the triad of attitude,

behavior, and choice (ABC) when she notes "the lexicon of ABC does not contain within it the terms and concepts required to discuss or debate significant societal transformation." Uzzell (2008) suggests that ``an emphasis on individual behaviour change may not be the most effective way of tackling society's relationship with climate change'' (p. 4), and in a report of a study conducted for Department for Environment, Food and Rural Affairs (DEFRA), Darnton (2004) makes a very similar point, arguing that "some of the ends of sustainability…may be better reached not through behaviour change by individuals but through government-led interventions, the targeted delivery of public services or upstream solutions'' (p. 9).

Environmental Education in India

Emphasis on living harmoniously with nature through protection of ecosystems is deeply rooted in Hindu philosophy (Almedia & Cutter-MacKenzie, 2011; Ravindranath, 2007) and enshrined in the Indian Constitution (Almedia & Cutter-MacKenzie, 2011). The Supreme Court of India ruled in 1991, and reaffirmed in 2003, the infusion of EE into school curricula. State governments were required to develop textbooks reflecting environmental problems and EE was made mandatory across all grades beginning in 2004 (Almedia & Cutter-MacKenzie, 2011). Nonetheless, rapid development, liberalization and industrialization have challenged ancient concepts of nature and devalued traditional rural livelihoods. The creation of a large consumer middle-class has perpetuated both Western lifestyle goals and notions of nature as separate from human beings (Jackson, 2004).

While academic evaluation of Indian attitudes toward nature generally, and wildlife specifically, has grown in recent years (Arjunan et. al, 2006; Karanth & Nepal, 2012) as has work on human-wildlife conflict (Madhusan, 2003: Ogra, 2009; Karanth et al., 2013), scholarly work on EE in the country is in its early stages. Jackson's (2001, 2004) insightful work argues that the insertion of EE into school texts has resulted in an increase in confusion about the cause and potential solutions to environmental challenges. Specifically, he notes that causal explanations for big problems like riverine and industrial pollution are unclear and do not lend themselves to understanding and action by students. Similarly,

In the matter of land and forest degradation, the causation is more complex and textbook writers have apparently found it difficult to say who will restore them…Here questions of land ownership arise, and those of rights of use, rights to manage, conflicts over use between industry and local communities, bureaucratic inefficiency and corruption, disintegration of the village as a community…Unless these issues are gone into and clearly explained by textbook writers, it is difficult to see how EE can be more than a formality. (Jackson, 2001, p. 27)

Jackson also raises questions about how environmentalism itself is formulated in India, and argues that Western focus on the preservation of charismatic species and aesthetic landscapes diverts attention from the human dimension of environmental degradation. Ultimately, educators may "fail to see that at the heart of every environmental problem is a massive human livelihood issue" (Jackson, 2003). An emphasis on the environmental concerns of a "minority of affluent, powerful urban dwellers" has overshadowed the livelihood and resource-use concerns of the country's larger rural population (Jackson, 2004, p. 94).

Our evaluation of EE at zoos in southern India and through the Centre of Environment Education (CEE) attempts to update our understanding of the status of EE in India, placing its national efforts in the context of common concerns in the global field. Finally, we seek to illuminate the construction of the environmental citizen through EE narratives.

Environmental Education Framework

A lack of attention to systemic, structural processes that produce environmental ills has been a concern of scholars and evaluators in recent years. Conceptualizations of a process of environmental learning that would move students from awareness, through basic knowledge, to more complex understandings of the production and amelioration of environmental challenges, and finally, to meaningful action, have emerged from these discussions. Monroe et al. (2008) provides a widely accepted framework for evaluating the effectiveness of EE programs. The four primary foci of intervention are to 1) convey information, 2) build understanding, 3) improve skills, and 4) enable sustainable action. This framework can aid educators in determining program goals and environmental educational strategies to support their mission.

Convey Information

Providing foundational knowledge about key environmental processes and challenges is essential in increasing environmental literacy. This category identifies the one-way transmission of information to build awareness about specific topics, and supplement existing knowledge.

Build understanding

Building understanding expands foundational knowledge by engaging audiences in two-way or group communication in an effort to build an individual's conceptual models for examining and evaluating concepts, values, and attitudes. Programs that challenge participants to engage more deeply through group discussion, writing, oral communication, research or hands-on activities such as building models, creating

projects such as composters or biogas machines, deepen their understanding through behavioral and cognitive engagement (Frederick et al., 2004).

Improve Skills

Improving skills, involves educators employing citizenship, critical thinking, and social marketing, encouraging personal responsibility and engagement while helping to improve upon skills required for behavior change. "Skills" in this context may range from cognitive abilities to social action skills, to more specific ecological monitoring skills (such as composting, or monitoring turtle nesting sites).

Enable Sustainable Action

Enabling sustainable action is an iterative process through which the educator and learner work together to address complex environmental issues through the definition of goals and possible solutions. This process places the participants in control of the outcome with educators providing support, enhancing opportunities for "transformation, empowerment and long-term problem solving" (Monroe et al., 2008, p. 214). While sustainable action is difficult to measure and track, educators affirm that the goal of EE is to equip and motivate participants to become active citizens for the environment, taking continued action to learn about and participate in solving critical problems.

Environmental Citizenship

Creating active environmental citizens can be seen as the ultimate goal of EE programming. While the notion of environmental citizenship has been debated and discussed at length in the EE literature, we adopt and expand on the practical environmental citizenship definition of Berkowitz:

[E]nvironmental citizenship can be defined as having the motivation, self-confidence, and awareness of one's values, and the practical wisdom and ability to put one's civics and ecological literacy into action. Environmental citizenship involves empowering people to have the knowledge, skills, and attitudes needed to identify their values and goals with respect to the environment and to act accordingly, based on the best knowledge of choices and consequences. (Berkowitz et al., 2005, p. 228)

Schild (2016) adds an important element to this definition, i.e., the need for collective action rather than a narrow focus on personal behavioral change. The emphasis in EE on the individual and on personal choices that impact the environment is recognized as problematic. Building programs that motivate citizens to engage collectively in facilitating wider structural and social changes (through revamping of public transportation systems, advocating for governments to aid in a transition from fossil fuels to renewable energy, pushing for policy change, etc.) is essential to the concept

of an environmental citizen. Citizenship demands public participation and cannot be constituted merely through private actions and beliefs.

Thus, our working definition of the environmental citizen is one which combines knowledge, skill, commitment, and personal as well as collective action for the environment that moves beyond mere personal behavioral change. To understand if educational programs promote the development of environmental citizens, we first seek to identify specific activities and events at each of the four stages of Monroe's framework for effective EE (2008). In addition, we look for opportunities for both personal and collective action to address wide scale, complex problems, and we seek to identify opportunities for shared governance and policy intervention.

Environmental Education Programs in India

Centres of Environment Education

One of the most encouraging aspects of EE in India is the level of central government commitment exhibited through the creation of the Centre of Environment Education in 1984. Its mission is to provide educational programs across a wide range of sectors, from schools, to villages, government and industry. While the spark that led to the creation of CEE was the Intergovernmental Conference on Environmental Education in Tbilisi, Georgia in 1977, educational work about nature was already underway in India. Kartikey Sarabhai, one of the leading environmental educators in the country, opened Sundarvan, a nature education center funded by the Nehru Foundation for Development.

Environmental education in India is distinguished from EE in post-industrial countries in that it has always been linked to issues of development:

CEE's primary objective is to improve public awareness and understanding of environmental and developmental issues with a view to promoting action for the conservation and sustainable use of nature and natural resources. To this end, CEE develops innovative programmes and educational material, and builds capacity in the field of environmental education and education for sustainable development. It undertakes demonstration projects in education, communication and development that endorse environmentally sustainable attitudes, strategies and technologies.

The ability of India's central government to establish environmental goals is also significant. In 2003, the Supreme Court of India made EE a mandatory subject in schools. This ruling broke open the EE field and created a large demand for curricula, programs of training, and opportunities for innovative EE programs. Following the 2005 UN Declaration of the Decade of Education for Sustainable Development, CEE

immediately moved forward by hosting an international conference on Education for Sustainable Development (ESD) in Ahmedabad. Ninety-seven countries and over 1,500 people participated in the conference, which led to the Ahmedabad Declaration on Education for Sustainable Development. The statement's emphasis is on a complex, systemic and integrated vision of how education can influence economic, political and ultimately, environmental decision-making:

Ever increasing human production and consumption is rapidly undermining Earth's life-support systems and the potential for all life to flourish. Assumptions about what constitutes an acceptable quality of life for some, often means deprivation for others. The gap between the rich and the poor is widening. The climate crisis, loss of biodiversity, increasing health risks and poverty are indicators of development models and lifestyles that are unsustainable…Human rights, gender equity, social justice and a healthy environment must become global imperatives.

The CEE has seven regional offices (south, north east, north, central, west, east, and Delhi), each of which covers multiple states or locales. For example, the CEE South region covers the states of Andra Pradesh, Karnataka, Kerala, Tamil Nadu, Lakshadweep as well as the Andaman and Nicobar Islands. While CEE was originally established and funded by the central government, funding has shifted to state governments, Non-governmental organizations (NGOs), grants and corporate sponsorships.

The types of programs offered, and the topics covered by CEE are startling in their breadth (Table 1; see also Appendix). The possible pros and cons of this wide approach will be discussed later. Below, we briefly describe some of the key programs offered by CEE. For a complete list of the activities and topics offered by CEE and identified through this research, see Appendix A.

Table 1. Education Programs Run by CEE, 6 months of 2017

Education Programs Run by CEE, 6 months of 2017
National Clean Ganga Mission
Jal Jeevan Hai – efficient use of water for agriculture
Permanent Exhibit installation at Kokrebellur Bird Sanctuary
Curriculum development in math, science, language and environment in Gujarat
Teacher training for sanitation and hygiene
DHaAL with Unicef – daily handwashing campaign
Cash-free, digital payment trainings
Children's Forest Programme in Uttar Pradesh, 1500 saplings planted
Learning Non-Violence
Establishing Eco-Clubs at 20 schools
Young Leader's Conference
Mari Shala/Reach to Teach, pedagogy on hygiene and health

Eco-mapping in Uttar Pradesh
Conference for Young Environmentalists on Smart Cities
Forests for Water Campaign, Karnataka
International Sustainability Exchange, Australia, Netherlands, Germany
Creating Green Campuses
Hosting Interns
Discovering Nature: 75,000 visitors to Sundarvan
Camping to Experience Nature
Turtle and Tortoise Conservation
Global Resilience Partners, SEWA Trust, USAID, Rockefeller to build climate resiliency of urban poor
Energy Conservation program for students
Training in managing biomedical waste
Multistakeholder dialogue for improve compliance with industry
Waste segregation clean up Kolkata
Student rally on plastics
National workshop on Waste Management rules to improve compliance
Sustainable Rural Development
Developed 4 permanent interpretive exhibits in four states
Grant making workshop
Earth Day Campaign and festival

Child Based Programming

CEE offers standard programs for school-age children, including school field trips to the CEE campuses. These day trips constitute a part of the school's regular curriculum. Schools are required to have a certain number of "outdoor field day" events. The precise number required depends on the individual school, ranging from one to five per year. During these programs, students are bussed to sites, where educational tours and activities (such as treasure hunts, worksheet exercises, etc.) are conducted. The purpose of these programs is primarily to reinforce scientific learning and is generally connected to the state or school's curricular standards and goals. Exposing urban children to nature is, however, also an important goal.

Nature camps, including sleep over events, are also common for school-age children at the sample sites with the Sundarvan discovery center hosting over 250 students from four states as part of a National Nature Camping Program 2017. Such camps seek to increase factual knowledge about local ecosystems and animals while providing the beneficial impacts of spending time outdoors in a relatively non-humanized landscape, in proximity to non-human living things. Such programs are based on the common theory that time in nature increases empathy and commitment to environmental goals. While the connection between "connection to nature" and action on behalf of

the environment is debatable (Lieflander et al., 2013; Fletcher, 2017), this remains a common ideology in many countries.

Educator Programming

India's EE agenda has focused heavily on providing learning through the formal school system. In 1985, a National Environment Awareness Campaign was launched to develop and coordinate the implementation of programs at schools. While CEE staff may visit schools and run educational programs themselves, the greater initiative is on training teachers and providing curricula materials on the environment, or to assist teachers and other organizations in developing such materials. Programs at schools also involve developing field day activities that take place outdoors or off campus.

In Andhra Pradesh, for example, the state CEE office worked with the state government and 33 NGOs to bring EE materials, programs and activities into 1556 schools, in all districts of the state. Manuals were developed for teachers that contain instructional materials as well as activities for the students. Rather than delivering curricula and then leaving teachers to manage on their own, CEE offers ongoing support by visiting schools periodically and helping coordinate annual EE events. As a corollary of this project, a wall poster linking lessons in the science curriculum, called *Parisarallo Pathalu* (Learning from our Surroundings), was developed and distributed to about 13,500 primary schools in the state.

In Karnataka, the CEE runs school programs that focus on preserving forest habitats and wildlife. Approximately 10,000 students visited the 500-acre campus of the center to experience educational programs, such as day trips or camps. CEE Karnataka staff also focus on capacity building by training local teachers (Sutar, 2019). Recently, the organization has launched an online certificate program so that teachers may become proficient in EE.

Capacity Building

Capacity building, i.e. train the trainer type programs, are a major thrust of CEE. With staff at regional CEE offices limited to 5 to 15 people, training other professionals who will in turn, teach others, increasing educational impacts through a snowball effect, is imperative. Indeed, even working with children is seen as capacity building, in anticipation that children will share their new enthusiasm and knowledge with their parents, who will in turn share with co-workers and friends.

Nature Hikes/Nature Centers

Nature hikes are a common program at nature centers, zoos and CEE campuses across India. Approximately 75,000 people are estimated to have visited the Sundarvan CEE

nature center in 2017. At this site, visitors participate in reptile awareness, hiking, bird watching, wildlife photography. CEE Karnataka also has an extensive natural area on its campus in north Bangalore, used for workshops, camps and educational activities. Additionally, CEE educators also make use of other natural areas, such as India's 50+ tiger preserves and bio-reserves.

Reducing Plastics/Reducing Waste

CEE's waste management programs focus on building awareness, training managers in applying principles of waste management and policy compliance, developing documents to assist in compliance, and tracking progress. Further, it develops "videos, toolkits, publications, games, posters, charts, etc.," and conducts demonstration projects of waste management practices and projects (such as biogas production, vermiculture composting, etc.). Finally, CEE engages in policy interventions in which its staff gives recommendations and suggestions at the city, state and national level on municipal waste handling and management.

Resource Conservation

Programs highlighting the need for resource conservation focused primarily on water scarcity and deforestation. Forest management was a common theme in CEE programs. Collective activities such as tree plantings were also executed. In rural areas, workshops on agroforestry aimed to assist rural farmers in developing more sustainable techniques to help maintain forest cover while not undermining livelihood. Conservation of water was also a frequent topic of CEE programs.

Hygiene and Sanitation

The most urgent effect of the lack of sanitation systems in much of the country is the detrimental impact on human health. CEE offers programs on hygiene which are designed to change personal behavior in order to prevent the spread of disease. While such educational efforts are no doubt helpful, we note the lack of focus on shared governance or policy intervention designed to actually solve the problem of poor sanitation.

Environmental Education at Zoos

Fieldwork was completed at three zoos in the southern Indian states of Tamil Nadu (Madras Crocodile Bank and Trust) and Karnataka (Mysore Zoo and Bannerghatta Wildlife Park). While all the facilities studied have conservation and research missions, the focus here is on educational programs.

Madras Crocodile Bank Trust and Center for Herpetology

Three species of indigenous crocodilians were listed as protected in India by the 1972 Wildlife Protection Act. All three species were near extinction due to centuries of hunting. The Madras Crocodile Bank Trust was established by Rom and Zai Whitaker in 1976 to focus on protecting these three important species, the mugger (*Crocodylus palustris),* the saltwater crocodile (*Crocodylus porosus*) and the rarest of all, the gharial (*Gavialis gangeticus*). Originally, the MCBT worked to multiply crocodiles and release them to the wild; however, with the loss of suitable habitat, this practice has now stopped.

Known today as the Madras Crocodile Bank Trust and Center for Herpetology (MCBT), the site houses seventeen species of crocodiles as well as turtles, lizards and snakes. While the focus remains on conservation, the staff of MCBT work closely with surrounding rural communities to increase knowledge and understanding of reptiles and decrease human-reptile conflict. Given that the public generally sees reptiles as dangerous or "nasty" animals, staff noted that their first task is to change public attitudes toward these maligned creatures. School field trips and nature camps, including sleep over events, are a regular part of their EE programming, but changing attitudes among diverse rural people is a critical function of the MCBT.

We cannot tell a rural family that their livelihood or their lives are somehow less important than the animals' lives. That makes no sense. We have to be sensitive to their circumstances. It is not our job to tell a community that their traditional belief system is wrong…we are just trying to introduce a more tolerant way of interacting with these species, and a greater respect and understanding of them. (Srimathi, 2019)

Exposing children to reptiles and shifting the emotional response from one of fear or disgust to one of interest and acceptance, is a primary goal of the MCBT's nature camps and programs for children.

Table 2. Education and Awareness Programs, MCBT 2017-2018

Education and Awareness Programs, Madras Crocodile Bank 2017-2018
The Junior Herpers for a Day (half day) camp - June 4th, 2017
Junior Herpers for a Day (full day) camp - August 20th, 2017
What's That Reptile? Series
Snakes and Lizards – May 13th and 14th
Juniors – May 23rd and 24th
Crocodiles and Chelonians – May 27th and 28th
What's that Lizard? – May 14th and 15th
What's That Reptile? Junior Series – May 11th and 12th
Junior Keeper for a Day camps – April 30th, June 4th, July 30th, August 20th,

September 10th, October 22nd, December 24th
Zoo Snooze (Adults) – June 24th and 25th
Snake Walks – September 17th, November 5th
Vruksha Montessori 2 Day camp – September 1st and 2nd
George Washington University(GWU) workshop – July 25th
PRIST University workshop – July 21st
USV Pvt. Ltd. School workshop – August 29th
Orchid School camp – April 23rd and 24th, October 20th and 21st
Birthday celebrations – July 30th, September 10th, October 7th, December 3rd, December 27th
KFI school workshop – September 15th
Know Your Reptile sessions and Guided Tours

Junior Keeper for a Day camps – February 18th, 2018
Junior Herpers / Half-day camps – February 25th,
Snake Walk – January 14th, February 11th, 2018

Mysore Zoo

Chamarajendra Zoological Gardens, also known as Mysore Zoo, was created in 1892 and named after its founder. Originally about 10 acres in size, the zoo is now almost 80 acres, and houses 1,450 animals representing 168 species, from more than 25 countries. Over 3 million people visit the zoo each year, with tens of thousands participate in its educational programming. The educational mission of the zoo is "to inspire local and global communities to protect, conserve and celebrate wildlife, and to provide a fun, unique and inspirational experience fostering appreciation, knowledge and care for the natural world."

The zoo's website lists special programs for physically challenged and special group children, literary competitions, celebration of wildlife week, World Environment Day, Youth Club activities, Summer Camp activities, signage, zoo keepers training, teacher training, internship and student programs, and publications as the primary educational outlets (Mysore Zoo, n.d.).Topics covered by zoo programs range from vermiculture production, human-leopard conflicts and co-existing with leopards, soil conservation trainings with local farmers, and training for mahoots (rural workers who train elephants).

Mysore Zoo is known for its biogas production facility and its elaborate demonstration vermiculture project. The zoo runs youth camps during the year and throughout the summer, which focus on the biology of animals, ecology and conservation issues such as climate change and urban waste (Kulkarni, 2019). An important feature of the education programs of this zoo are regular conservation speaker events, which are held every quarter and attract upwards of 800 people. Recent topics include agroforestry as a way to ameliorate climate change and drought, why otters matter, human-leopard conflict, and conservation of the lion-tailed macaque.

Bannerghatta Biological Park (BBP)

Bannerghatta is a biological park on the outskirts of Bengaluru. The park is currently 12 hectares and undergoing expansion. Approximately 2,000 animals and birds representing nearly 100 species are housed at the facility. Over 14,000 people visited the park in 2017. The facility's mission is "To educate and enlighten the public (visitors) by displaying wild animals that are equally important, interesting and essential for the ecosystem's support and thus create empathy towards wild animals in the public. To offer an excellent opportunity to the people to connect with nature and wildlife" (BBP, n.d.). One of the biggest attractions of this facility is its large carnivores; presently there are 26 regular Bengal tigers, 7 white tigers and 19 lions on site.

Of the three zoos visited in this research, Bannerghatta is the least developed. While the website claims educational programs on reptiles, snake bite protocols, animal management, urban-animal conflict, and the impact of plastic ingestion, little evidence of any such programs was seen during site visits. The only educational program in evidence was a school trip.

Research indicates that in late 2017, BBP began sponsoring student trips from government schools in the Human Wildlife Conflict (HWC) zone, aimed to increase awareness, knowledge, and tolerance of wild animals. From 2017 to 2018, over 1,000 students came to the park through this free program. Additional groups of students also came to the park under a Forest Department program. With assistance from Mysore Zoo, Bannerghatta launched a Youth Club in 2017. For over 15 Sundays from 10 am to 1pm, 60 children in the age category of 12 to 18 from schools in Bangalore attended the program in 2017 through 2018.

Bannerghatta's prime attraction is a popular series of jeep safaris through animal enclosures, in which passengers come in relatively close contact with elephants, gaurs, hippos, Bengal tigers and Asiatic lions. This type of emotional engagement (Frederick et al., 2004) is critical for effective learning. Up close and personal interactions with non-human animals are one of the most popular features of zoos, and educators agree that such interactions can foster compassion and concern for endangered species (Myers et al., 2009). The white Bengal Tiger photographed below (Figure 1), was one of four similar tigers in their enclosure at Bannerghatta.

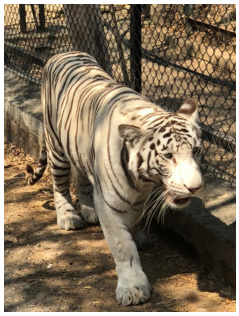

Figure 1. Up Close and Personal at Bannerghatta

As the jeep entered each animal enclosure, the driver stopped at a strategic location so passengers could take up close pictures of the animals. However, no commentary was provided by the driver about the animals, so other than a visceral experience of being only several meters from a large carnivore, no knowledge was conveyed to the participants.

Rural Livelihoods and Co-Existence

Environmental educators in India face a challenge unique to developing countries: the knowledge, needs and lived experience of urban Indians is quite different from that of the majority population who remain in rural areas. Indeed, Jackson (2004) notes a tension between programmatic differences arising from urban middle class and rural villages. The divergence in programming remains ironic: rural people, who have never left the land, are helped to live more sustainably while coexisting with wildlife, and urban residents are helped to "return" to nature, reduce waste and reduce consumption. Because Indian society is still in the process of urbanization and industrialization, the opportunity exists to slow the disconnect from nature evidenced in post-industrial societies. Similar to leap-frogging over some development failures (such as fossil fuel dependency), India has the opportunity to preserve sustainable attitudes and livelihoods in places where they still exist.

Livelihood in Human-Wildlife Conflict Zones

In rural India, many villagers live in areas shared with wildlife. Elephants, for example, destroy 14% of crops in India annually (Madhusan, 2003). Conflict with tigers, while not common, still results in over 100 human deaths per year (National Tiger Conservation Authority, 2019). In coastal areas of Tamil Nadu, an area designated as the Crocodile Conflict Zone is of particular concern to environmental educators at the MCBT. Educators demonstrated sensitivity to the constraints of rural life:

You cannot talk to rural people about the need to conserve non-human species without understanding their livelihood struggles. We give rural villagers our ears; we listen to their complaints and try to understand how they live. We try to work out a way for peaceable coexistence with wildlife (Srimathi, 2019)

Both Mysore Zoo and the MCBT focused on education about wildlife in the Human-Wildlife Contact zones in their regions. For example, Mysore Zoo dedicated one of its quarterly conservation speaker events to a discussion of human-leopard problems in the region.

Table 3. Rural v. Urban

	Rural	Urban
Types of Programs	Agroforestry	Air pollution
	Water efficient agriculture	Water pollution/rivers
	Wildlife conflict	Water scarcity
	Sanitation	Sanitation/hygiene
	Waste management	Plastic reduction
	Biogas/vermiculture	Waste management
	Eco-mapping	Digital payments
	Organic farming	Tree plantings
		E-waste clean up
		Green campus/schools
		Nature camps
		Workshops
		Conferences
		Certificate courses

Signage and Permanent Exhibits: The Missing Humans

Signs and permanent exhibits are critical components of zoos. While many zoos provide educators on the grounds and special programs to engage visitors in learning experiences, material artifacts that aide in learning are the primary way information is conveyed to the public. Photographs were taken during site visits to all three zoos (323 photos total) to facilitate visual analysis of permanent exhibits.

Signage at the three parks emphasized factual information about each species and was multilingual, reflecting the diversity of local populations. While all three facilities provide adequate information about resident species, the presentation of the information varied significantly between zoos in terms of the depth of information and quality of the signage. Two of the facilities have engaging signage, attempting to motivate visitors to care for wildlife, but lacked specific direction on how the public might assist in wildlife preservation. The physical space of all three facilities was suitable, with both the Mysore Zoo and the MCBT presenting very pleasant, large and well-maintained grounds. Some opportunities for participation in learning were provided, but these were minimal (safaris, listening to speakers, tram tours).

The MBCT had fairly new signage that was generally in good condition. Permanent exhibits included a scientific display of skulls of the many species of crocodilians resident at the park (Figure 2).

Figure 2. Permanent Exhibit at the MBCT

While emphasis on human interaction with non-human species did not feature strongly in the signage at all three parks, MCBT did have several large murals encouraging visitors to "treat them [muggers] with respect….and relearn how to live safely with crocodiles." The mural also emphasized that "sadly, most wild populations have disappeared. There is little habitat left because humans have taken over the spaces that used to be theirs." While this verbiage is helpful in linking human systems to the decline of the marsh crocodile species, there is no suggested action, personal or societal, to ameliorate the problem of habitat loss. Instead, it is merely presented as a sad problem with no apparent solution.

Figure 3. Cultural Interactions with Crocodiles at MBCT

MCBT also displayed a well-crafted mural depicting crocodilians in cultures across the globe. The mural signifies the importance of these animals, and the esteem with which they were held by different societies.

Mysore Zoo's signage was also generally in good condition. The factual information for each species was detailed and presented in several languages (Figure 4). There were no references to human behavior or specific actions that visitors could take to help the endangered animal species.

Figure 4. Typical Informational Signage at Mysore Zoo

Visitors were treated to inspirational messages along the walking path, such as "animals are true friends," "wild animals are great assets," "service to animal is service to God," and finally, "Go Green to get our Planet Clean." Signage using first person syntax (Figure 5), with the animal is speaking directly to the visitor, was innovative and engaging. Use of humor also made Mysore Zoo's signage appealing (Figure 6). Finally, signs included a reminder that zoos are for education as well as entertainment (Figure 7).

Figure 5. Engaging Visitors in First Person

Figure 6. Humorous Signage at Mysore Zoo

Figure 7. Reminder that Zoos are for Education

Older signage at BBP was in disrepair and was the least impressive of the three sites visited in this research (Figure 8). However, some upgrades had been recently conducted (between the researcher's preliminary site visit in 2017 and the field research in 2019). Signage is perfunctory and factual. Corporate sponsorships of the zoo were prominently noted around the grounds and on exhibit signs.

Figure 8. A typical Sign at an Animal Enclosure at BBP

Analyzing any narrative requires that we pay attention to silences and omissions (Foss, 2009). Signage at all three facilities, while using some innovation approaches such as humor, inspirational quotes, and first-person messages from animals, appears to replicate a persistent limitation seen at zoos elsewhere, with a lack of attention to human systems and the impact of humans on the species displayed. Ample opportunity exists in each of the facilities to elaborate on how urban sprawl, human hunger for resources, increased road traffic, encroachment on wild areas, and pollution impact resident species. The zoos in the sample focus on increasing awareness of endangered species and fostering a more empathetic connection between humans and non-human species – an "open the door" philosophy of EE, in which humans are essentially softened up to be receptive to additional cognitive information about animals, and eventually,

one hopes, to a deeper understanding of how human actions impair the survivability of other species. The study facilities did offer occasional programs that were more active and required greater commitment and engagement by the public, such as workshops on identifying birds and butterflies (Figure 9) and creating compost with vermiculture (Figure 10).

Figure 9. Skill Building Permanent Exhibit at Mysore Zoo

Rhetorical Analysis: A complex EE for a complex country

Rhetorical analysis allows patterns of emphasis to appear in the discourse being provided by CEE and its regional offices to the public. Ideological rhetorical analysis (Foss, 2009) was applied to identify the beliefs and values of the organization as reflected in their public narratives. Since "description is the reality we experience" (Foss, 2009, p. 268), we interpret the narrative discourse created through CEE's ongoing communications with its audience. The objective of the EE narrative is to teach, to convey information and to encourage action. Specifically, Monroe's EE framework was applied to identify words that reflect either an emphasis on science/facts; an emphasis on affective connection/ emotional or spiritual values of nature; an emphasis on skill-building; and an emphasis on action. The narrative that emerges from EE in India was analyzed for constructs of active citizenship, specifically, to identify where the emphasis on making change occurs. Are environmental citizens conceived as individuals, making personal choices about their behavior (recycling, reducing plastics) or are they, perhaps simultaneously, positioned as members of a collective (neighborhood, city, state, nation) tasked with working together to change larger structures which enable and sustain environmentally damaging practices?

Convey Information; Build Understanding; Improve Skills; Enable Sustainable Actions

Every person interviewed during fieldwork stated some version of "creating lifelong conservationists" as a primary goal of their work. Conveying information to participants in order to facilitate engagement with environmental challenges was clearly seen as the most important aspect of EE work; motivating citizens through increase in an affective connection to nature was also highly valued. Many programs encountered in the field and through document analysis are skill-based programs, and some were highly specialized, for example, how to build a vermiculture site (Figure 10) or create a biowaste system.

Figure 10. Solid Waste Management Program (Vermiculture) at Mysore Zoo

Breadth v. Depth

This evaluation of the programs of a select set of zoos and of the CEE indicates a wide range of topics covered. However, sporadic one-time events on multiple topics may lack the impact of a more consistent and deep focus on a singular issue. Over the period in which social media posts were tracked, CEE posted about conferences, workshops, teacher trainings, online courses, nature outings, etc. - a total of 29 different types of events. Over this time period, 49 different topics were covered by CEE events, ranging from events on plastics, water scarcity, and energy conservation to teacher trainings and environmentally friendly dyes for holiday celebrations.

The educational programing in sample zoos covered fewer topics and events, which was not unexpected. Zoos distribute their time and effort across three main categories: conservation, research and education. Indeed, the focus of zoos on animal welfare, habitat loss, and climate change impacts on animals is suitable. Expanding their

educational reach to other issues not directly related to species health and survival may not be appropriate. The intense focus of MCBT, for example, on changing attitudes toward reptiles is consistent with their mission.

Table 4: The Four Rhetorical Signs

Environmental Education Focus, Key Words	Zoos	CEE
Signs of Awareness & Factual Knowledge	Zoo tours, animal exhibits, signage, zookeeper interpretation, safaris, nature camps, school day trips	Nature hikes, nature camps, workshops, teacher trainings, youth conferences, national conferences, climate change lectures, biodiversity lectures
Signs of Understanding & Analysis	Zookeeper interpretation, safaris, on-site lectures	Workshops, teacher trainings, courses, certification, youth conferences, national conferences, climate change lectures
Signs of Skill Building	Essays, art and photography exhibits, biogas workshops, vermiculture workshops, agroforestry workshops, bird identification	Handprint, hands-on learning, model building, stakeholder dialogue, empowerment of women and marginalized communities, rural sustainable development & livelihood, eco-mapping, cultural performances, student exchanges, experiential storytelling, organic farming, composting, digital payment, watershed management, research and writing for conservation, waste segregation
Signs of Action	Biogas workshops, vermiculture workshops, agroforestry workshops, internships, zookeeper training, plastics ban	Community clean ups, oath signing, reducing/banning plastics, waste segregation, hygiene and cleanliness, organic farming, Clean Ganga, research and writing for conservation, composting, digital payment, watershed management, non-violence training, energy conservation/ renewables, tree plantings, postcard campaigns

Scholars have noted the tendency of EE programs to focus primarily on building awareness and increasing fundamental knowledge about ecosystems. Programs that build skills, create the capacity for a deeper analysis of the production of environmental problems and their solutions, and facilitate action on behalf of environmental progress, are less common. The most challenging goal for environmental educators is creating citizens that are capable and committed to sustained action on behalf of the environment. In this regard, the CEE has programs that increase the skills of the participants, incorporating immediate action (tree planting, river clean ups) or creating conditions for long-term actions for nature (such as watershed management, organic

farming, writing for the environment). However, the actions encouraged through EE programming are cemented in personal choice (the ABC theory of change) and rarely address larger scale structural change required to ameliorate the weighty environmental problems India faces.

Defining the Environmental Citizen in India

Who is India's environmental citizen? Visual analysis of the programs highlighted by CEE in social media reveal an urban, well-educated, middle-class target audience for environmental messages. Participants are always well-dressed or in school uniforms, appearing clean and contented. This image of the middle-class urbanite, employed in environmental management or caring for nature through green consumption and modification of personal behavior, is a familiar construction of the environmental citizen.

Interviewees were consistent in stating that the goal of education was to create lifelong "conservation citizens." One respondent explained that he hoped participants in EE would remain aware of environmental impacts of their own actions, and would become ambassadors for the environment in the workplace and community. He noted a few graduates who had gone on to have careers related to the environment, while also acknowledging that not everyone could work in a field related to conservation (Kulkarni, 2019).

Where India's programs diverge from this norm, however, is in the work being done in rural areas, in villages, with farmers and their children who live in daily contact with forests, rivers, swamps, deserts and the non-human inhabitants of these ecosystems. Because these citizens are less likely to fit the stereotype of the urban middle class environmentalist, they are rarely shown in images promoting CEE programs. In conversations with educators, environmental citizens in rural areas were constructed as hardworking individuals for whom livelihood demands may make conservation behavior difficult but not impossible (agroforestry, for example), and who can learn to live more harmoniously with wild animal neighbors.

The consistent tone of social media coverage of CEE events is one of success and optimism. Such words as "inspiration," "joyful", "take a bow," populate the brief textual annotations that accompany photographs on sites such as Facebook. The visual narrative created through social media emphasizes groups of well-dressed, smiling adults (Figure 11) or children.

Some images include children running or playing outdoors or engaging in model building (Figure 12). No images of destroyed landscapes, daunting piles of plastics, denuded hillsides or polluted rivers were displayed in the time period of the study. Hence, the

visual story is one of active citizens, happily solving their community's environmental woes.

Figure 11. CEE Seminar on Environment and Development, Delhi

Posts tend to have a celebratory tone and convey pleasure and pride in the activities of the organization. While this may increase clicks, it is also true that environmental problems are often emotionally upsetting. Conveying the seriousness and the detrimental impact to life of oil spills, lack of water or food, plastic pollutants, etc., may be a useful strategy for gaining attention and commitment of the public, and one which CEE might want to consider. CEE rarely if ever engages this strategy. The overall feeling evoked by social media coverage of CEE is that of success: all sorts of environmental problems are being tackled and solved in a rather mysterious and somewhat haphazard manner by this omnipresent organization. While a benign feeling of "all is well" may emerge from this social media discourse, such a feeling does not match the urgency of environmental challenges and may have the unfortunate impact of dissuading some observers that any action on their part is necessary.

A noted accomplishment of CEE was the introduction of the Handprint measure in 2007. Handprint is a "tool to calculate the extent of ESD action being taken and the positive impact of our actions on Sustainable Development" and is licensed to CEE India.

Handprint is positive action, commitment, measurement; it also means connecting – joining hands, a symbol of care …Our lifestyle is directly connected with the consumption. It has become part of one's life and so there is a need to practice positive sustainable actions from now on. Actions are intentional and so is Handprint. Experiences and actions are very closely linked. (Handprint, n.d.)

Unlike the widely used notion of "ecological footprint," for which several common measures have been developed, *Handprint* allows one to estimate the positive gains made through one's actions, such as reducing water or energy consumption, or taking action through recycling or clean-ups.

Figure 12. Children create a model India

Emphasizing the Personal v. the Collective

While CEE programs do focus on changing individual behavior such as reducing the use of plastics, individual actions are most often situated within a collective action or carried out through a community organization or corporate entity. Rather than focusing on asking individuals to privately change their behavior, CEE programs take place in public spaces and in public view. Given the communal nature of Indian society, this approach might be expected, and contrasts with the dearth of collective approaches in countries such as the U.S., in which the individual citizen is paramount. Even when education targets individuals, the expectation of the educators interviewed here is a kind of "snowball theory of change," in which one person is fully expected to talk to and influence people in her immediate circle (friends, family, co-workers), who in turn will also influence others. In a kind of informal chat-based cultural diffusion process, ideas about the environment will spread through communities. As one interviewee noted, "laws can't solve everything – it has to be a grassroots effort" (Sutar, 2019).

Emphasizing the Structural

Environmental educators working with rural communities recognize structural elements that shape behavior. Rural people are seen by educators as constrained by the context of rural life, particularly the need to use resources for sustenance and living in close proximity to wildlife. Environmental educators do not seek to change the structure directly, recognizing little can be done about the villagers' need to use local resources or the steady sprawl of human settlements into crocodile and snake territory. Rather, their work with rural residents falls firmly within the realm of the ABC theory of change: in which information can change an individual's attitude, which will then impact their behavior. This process is seen as a choice made by individuals, rather than any collective effort to alter the circumstances in which such individuals live. For example, team members from MCBT visit rural areas when residents report an incident in which a person has been harmed by a crocodile or snake. By providing information about the species and their behaviors, helping rural people distinguish between venomous and non-venomous snakes, or how to avoid crocodiles in their habitats, educators hope to increase "peaceful co-existence" and reduce harm to both humans and reptiles.

Signs of Progress

Environmental education programs tend to emphasize awareness, experience of nature, and basic ecological knowledge. The challenge for educators is to move participants beyond these fundamentals, into deeper analytical understanding of how environmental problems are created through large-scale societal processes, equipping citizens to combat these ills through personal and collective action. Indian EE, as witnessed through this research, encompasses much within early stages of ecoliteracy, and has also begun to grapple with the tougher problems of skill building, systemic analysis and collective action for structural change.

CEE's website notes that policy intervention is an important part of its knowledge dissemination work for sustainable development. Specifically, it aims to inform decision and policy-makers on sustainable alternatives to conventional technologies (CEE, 2019). Evidence from interviews and document analysis suggests an awareness of the need to engage in "Policy formulation, public engagement and communication strategy development," (Menon, 2019). Educators in CEE's urban office in Pune work to increase participatory governance and public engagement with government programs and policy makers. Educators in the CEE Goa office also emphasize policy interventions and stakeholder consultations (CEE Goa). The primary form such actions take is through stakeholder dialogue and discussions between policymakers, educators and the public (Menon, 2019).

We have been trying to arrange public deliberations on street design and mobility, but

with very limited results. We are inspired by deliberative democracy and participatory budgeting work, as well as gram sabhas in rural India. Urban areas in India don't have analogous forums for public participation, and the urban context does pose several challenges (e.g. structural inequity, population density, time, scale). (Menon, 2019)

CEE Pune staff note that they have been working to increase public consultations with local government, particularly in the area of transportation planning and urban design. "Our role was communication design, public outreach, stakeholder engagement and governance assessment, and then writing up the draft plan" (Menon, 2019). CEE has also arranged public consultations on issues related to coastal areas, commercial development, and state level climate action plans. The thrust of public governance work is relatively new and still in the development stages.

Conclusion

While India as a whole is making progress in several areas of large scale change, such as moving to renewable energy sources (The State of India's Environment, 2019), there is no evidence to connect this to the impact of EE directly. We can only infer that such programs have helped pave the way for public acceptance of policy changes, but without rigorous investigation of this connection, we cannot know for certain. Furthermore, the country continues to face monumental environmental problems, specifically in regard to air pollution, urban sprawl, solid waste and sanitation, and water pollution and scarcity (D'Ambrogio, 2019). The ability of EE to prompt the kind of wide-scale, infrastructural change needed remains uncertain.

Finally, discussions on environmental citizenship have noted that conflict is an inseparable part of systemic change (Barry, 2006). A vision of citizenship that excludes any kind of confrontational or conflictual interactions may risk being ineffectual in addressing the massive environmental issues facing India. While CEE's citizenship narrative includes community level activities such as "oath signing" and the occasional rally, no large-scale political actions were encouraged. For example, there are no references to engaging legislators, or building a grassroots movement to agitate for policy changes. Programs that engage local government or industry in conversation do occur, and several interviewees mentioned organizing policy interventions and working for participatory governance (i.e., stakeholder dialogues), but these were rare. Such strategies are also lacking in other countries' approaches to EE, as illustrated in the U.S., where lobbying for policy change and direct actions such as marches and protests are the purview of advocacy organizations (i.e., Sierra Club). A similar gap between India's long history of social movements on behalf of local ecosystems and the field of EE is apparent. However, given the severity of climate challenges and the scale of environmental problems in India, educators might benefit from rethinking environmental educations' aversion to

advocacy, shifting the emphasis from education *in* and *of* the environment, to programs *for* the environment, including pushing for large scale, structural changes – even when such strategies cause conflict. Constructing EE as a happy and enjoyable pastime may not serve the interests of the environment or the people who depend upon it.

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