

Communicating Education for Sustainable Development with Less Articulate and Underprivileged Communities: Innovative Approaches to Socially Critical Environmental Education

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Abstract

The vision of socially critical Environmental Education (EE) can help remove the barriers to effective communication especially among the underprivileged and less articulate local communities. Some of the limitations of socially critical EE may be addressed through innovative and community-centered local-knowledge-based participatory approaches. Three such innovative approaches implemented by environmental NGOs and local communities in Maharashtra, India viz. biodiversity contests, recipe contests and the community plant diversity register are described in this paper. The performance of these approaches in terms of the communication strategies used, the target groups served and the elimination of the barriers to communication is also examined.

The organization of the paper

This paper is organized into four sections. The first section provides a cursory look at emerging trends in EE and discusses the dynamics of communication among local communities in one of the most relevant forms of EE i.e. socially critical EE. The second section reviews the examples of the different modes of communication in socially critical EE across the globe and in India. The third section briefly describes three case studies that show innovative methods from India. The final section concludes with a cursory evaluation of these methods by suggesting the ways for improved communication targeted at less articulate and underprivileged rural children and local communities and addresses some of the limitations of socially critical EE.

Communicating for the environment: The relevance of socially critical EE

The recent trends in programs and policies of EE reveal that EE can be more effective if it can make use of prior experiences that children bring to schools, often acquired within their communities through informal learning modes (Palmer, 1998; Chawla, 2001). Palmer also concluded that the world's most successful programs in the 21st century would be those in which formal and informal elements of education are supported alongside each other, with the involvement of major stakeholders (1998). Sauvé notices, 'many aspects of socially-critical environmental education, as defined by Robbottom and Hart (1994) correspond to this vision' (1996). Walker, based on these works, lists four criteria for socially critical EE, viz.; a) Involvement of students, teachers and communities in collaborative investigations of local environmental issues; b) Schools working together with communities to develop a new critical awareness of the roles that communities play in influencing the course of such issues; c) making explicit the values and interests of various groups, and d) Unfolding of the local environmental issue by prior commitment to teaching a body of knowledge/skills(1997).

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The socially critical approach draws its conceptual underpinnings from critical pedagogy (Freire, 1968, 1985). The desired result is the empowerment of students and teachers to bring about social transformation and change on the basis of democratic and socially just ways. In the Indian context, Gandhiji's philosophical and political activism has been greatly in line with the Freirian critique of formal education as a tool of oppression and political power. This vision gave birth to an alternative education model to that of the basic education model *nai talim*, which revolves around local knowledge, practical experience and emphasizes the importance of regional languages (Sherry Chand, 1996). Critical pedagogy's new philosophical form is socially critical EE which, according to some scholars (Palmer, 1998) constitutes a 'radical reform' approach to environment improvement, one that views the environmental crisis as a larger problem of society.

In her most recent critique on socially critical EE, Walker challenged the application of socially critical theory in EE due to its impracticality in bringing about change in existing school practices and its inability to explain educational change fully (1997). She concludes, 'for many practitioners, socially critical theory not only fails to give them an implementation theory, it *de facto* denies their own practical knowledge' (Walker, 1997: 5). This gap in recognizing the potential of local knowledge is also seen in Robbottom and Hart's proposed community-based model of socially critical EE, wherein the role of the community's own knowledge has not been highlighted clearly. Both of these limitations also add up to the major challenge of communicating with and by 'underprivileged' and 'less articulate' group of stakeholders, including tribal rural communities and most importantly, children and women.

To counteract these two main theoretical criticisms viz. impracticality and making explicit use of local knowledge systems, it may be useful and interesting to review and discuss the examples, which have demonstrated at least one of the methods of socially critical EE.

Communicating by putting socially critical EE in practice: Review and examples

The issue of combining different knowledge systems of stakeholders (and more specifically bringing in the local knowledge of the community to partner the formal systems of knowledge) may be suggested as a stepping-stone, which can also make socially critical EE practical. The literature on the ways and methods of facilitating such fusions of knowledge however, is scanty (CEE, 1999; Semali and Kincheloe, 1999; Gardner and Shukla, 2002) and focused on non-formal EE programs for the high school level or for post-secondary education. Non-formal EE programs seem to have evolved from the camping programs in the 1980s in North America. The North American Association for EE has designed instructional programs at community or school sites, which have become popular methods of incorporating EE in formal schooling through outdoor EE programs (Lori et al, 1988). Some of these programs have intentionally or unintentionally tried to separate informal learning from local knowledge systems and formal schooling as documented in the international case studies on non-formal EE. Some of these examples are provided in the following box (Box 1), to give an idea of how students, teachers and communities have joined hands, established common grounds of communications and have engaged in reciprocal learning in innovative ways.

Box 1: Some examples linking local knowledge systems with formal EE

- In a primary school in Bairnt Antholing, Bavaria(FRG), a class teacher together with his pupils (aged 8-10) developed a cultivated plot, a natural meadow, village pond, field with historic types of grains and wild herbs and protective hedge were created in cooperation with parents and local farmers.
- At Loreto Apruntino, Italy, school students and teachers observed relationship between aspects of the rural environment and socio-economic and cultural living conditions of local people (professions, dialects, customs, everyday family life etc.).Excursion and interviews etc. have been used as data collection tools. Results were then displayed through an exhibition on rural civilization in the local museum.
- In Czechoslovakia 'Golden leaf' competition for young pioneer group (autumn 1972)' were organized comprising of practical activities litter-cleaning, tree/shrub planting, promoting and practicing biological control of pests etc. undertaken by young people in conservation management and environmental studies. The object of the campaign is to get involve youth in environmental issues. Each competition was judged on this practical activity and tested on actual nature trail where competitor's knowledge and experience was tested. After the district and regional level, competitions were organized at national level for up to less than 12 years group and up to 15 years group. The final contest was held in forms of a camp where the best groups contested. During camp, discussions, film-shows and excursions were also organized.
- Similarly, for the school children of 12-15 years workshop was organized in Prague in 1973-74. The 60 minutes workshop had different themes of environmental education consisting of film presentations and puzzle-solving session followed by nature trail competition among teams of participants. For instance, Workshop on 'Plants and animals as natural resources' started with film on conservation of protected species then children were asked to complete the scheme of food-chain by connecting lines through several living things and then natural trail competition.
- West Virginia case study provides a pedagogical method which imparts the students to combine out-door nature studies and Native American studies. Winter Lodge is a 2-day and one night program developed for the grade 5 students. The uniqueness of the program lies in its approach, which combines educational techniques and principles with the use of dramatic techniques.
- A teacher in Junagadh forest district of Gujarat India, inspired students to collect different shapes and types of plant thorns with support of local shepherds and village communities. These thorns were later organized in educational charts and a small less-known village school received honor and award in state science competitions.
- The organizations learning through Landscapes in UK (www.jtl.org.uk) and Natural learning in the United States (www.naturallearning.org) have encouraged local communities and students to explore local natural resources by turning their school yards into experiential open access natural areas.
- The foxfire approach in Appalachian Georgia State of U.S.A, have inspired high school students and teachers to learn Basic English through oral histories and folkways of native Appalachian everyday life in nature. Based on experiential learning approach, this experiment has produced magazines and series of books, which are valuable references for schools to learn about native knowledge. The foxfire approach, which was originated 30 years ago, is still recognized as model for school reform demonstration programs in the United States.
- Rediscovery is an outdoor environmental education program initiated in 1978 in British Columbia, Canada. It has expanded into an international activity with 40 or more such regular annual programs in North America. The native elders and local experts provide ecological teachings in a camp through folksongs, nature trails and local cultural forms for native and non-native young students.

Source: Center for Educational Research and Innovations (1991), Saveland(1976), Chand and Shukla(1998), Starnes(1999), Henley(1996), Chawla(2001).

In line with these efforts in North America and Europe, the response from a developing country like India was gradual but noteworthy. To fulfill its obligation as a signatory of the Convention of Biological Diversity, the Government of India has drafted the National Biodiversity Strategy and Action Plans (NBSAP) for the states. NBSAP¹ notes, that the formal education system in India provides great scope for creating awareness about biodiversity and its conservation among children and youth. However, there are gaps in terms of the coverage of biodiversity, and the methodology of teaching. In particular, the formal education system needs to create space and scope for the community's traditional knowledge systems and practices' (www.ceeindia.org).

The incorporation of local knowledge systems into the school curriculum in India has largely been attempted by development NGOs and a few isolated but motivated educators. Notable in this regard are the efforts of SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institutions), based at the Indian Institute of Management, Ahmedabad. They have valorized the local ecological knowledge of tribal people and the poor children and communities across India through innovative scouting methods like biodiversity and recipe contests (For details see SRISTI, 1994). The Peoples Biodiversity Registers program (Gadgil et al, 2000) was launched in southern India with the aim of providing intellectual property rights protection to the local communities through protection of local biodiversity and associated knowledge systems. This grassroots program has demonstrated that the local ecological knowledge of village communities can communicate and collaborate with village level formal institutions such as the panchayat or schools, and thereby create socially critical EE for conservation. Center for Environment Education (CEE) (an autonomous organization supported by the Ministry of Environment Education, Government of India) reviewed the primary school level curriculum of EE in order to recognize and support innovative EE programs in 1987 and initiated efforts to correct certain inadequacies through programs like BAIDIK² (CEE, 1999) at the primary school level. At school level, an innovative experiment in Hoshangabad, Madhya Pradesh was initiated by a local NGO called Ekalavya with support from university scientists. This experiment emphasized the use of educational aids made from local and low-cost materials, as well as learning from local communities' daily rural life experiences. The experiment was expanded to more than 500 schools in Madhya Pradesh by mobilizing political support from the state government, and is being regarded as a successful educational reform with regard to teaching science in schools (Rampal, 1994). In the field of school-based EE, a practical course titled 'Our land our life' was designed and implemented by a local NGO, the Uttaranchal EE Center, in 1987 with the help of state and national departments of education in the Himalayan region. This course curriculum encourages high school students to engage in solving local environmental issues such as land degradation using both the local knowledge of the elders in the villages and the concepts learned through the formal EE curriculum in schools. It has now expanded to over 530 schools in Uttaranchal, covering more than 68,000 high school students (Pande, 2001). Many of these NGO-led initiatives targeted at the school level correspond to the Gandhian philosophy of alternative education models for economically and socially disadvantaged groups like women and tribal communities.

¹ The State Action Plan (SAP) of Gujarat is a part of the National Biodiversity Strategy and Action Plan (NBSAP) being prepared by the Ministry of Environment and Forests (MoEF) with support from the Global Environment Facility (GEF). The NBSAP is to be a detailed micro-level plan for the conservation of the country's biodiversity. Undergraduate and postgraduate students in different regions can take up a variety of biodiversity studies, close to their own place, along with their teachers. There are examples of colleges having taken up such studies. In Pune RANWA has prepared an assessment of species diversity in the city, through college students. In Karnataka, CEE South has carried out an Environmental Quality Monitoring programme in nine districts with 20 undergraduate colleges.

² The BAIDIK (Biodiversity Awareness Integration through Documentation of Indigenous Knowledge) initiative implemented by CEE has noted that knowledge regarding ethnobotany; plant-based home remedies and eco-indicators were recurrently reported by children of five different agro-ecological zones in India.

Unfortunately, these efforts seldom attracted the attention of policy makers, development agencies or mainstream educators (and more specifically environmental educators) and remained neglected. Barring a few exceptions, most of these efforts have been limited to short-term projects and somehow could not become a regular part of mainstream or formal education due to variety of reasons, including the lack of effective communication among various stakeholders and most importantly between knowledge creators, supporting institutions and policy makers. Gupta highlighted ten barriers for effective articulation, dialogue and utilization of formal and informal science in public policies (1999). Some of these communication barriers, if addressed, could help overcome the impracticality and limitations of socially critical EE in making use of local knowledge systems. The three case studies presented in the next section, are an attempt to demonstrate the ways in which such barriers were handled.

Community-based socially critically EE: Case studies

Three innovative attempts experimented among the rural, poor and tribal communities in Gujarat and Maharashtra viz. biodiversity contests, recipe contests and community plant diversity register are highlighted here to demonstrate the potential of these methods in successfully establishing communication among various stakeholders building on local knowledge systems thereby, creating a case for applied socially critical EE for sustainable conservation of plant diversity. Both the biodiversity and the recipe contests have been innovated and experimented by SRISTI (www.sristi.org) in various parts of India to document and recognize the local knowledge of rural school children and women. The community plant diversity idea has been inspired from the People's Biodiversity Register Program (Gadgil et al, 2000) and is being self-experimented by tribal village communities of *Baripada* village, in the Dhule district of Maharashtra.

Biodiversity contests

Biodiversity contests focus on children and their traditional ecological knowledge. The philosophy that guides them is that children are the future guardians of biodiversity conservation and resource management at the local level. The idea of biodiversity contests, as articulated here, originated at SRISTI, and was implemented successfully in various parts of India, Bhutan and Vietnam through members of the Honeybee Network (www.sristi.org). The biodiversity contests were aimed at school-going children and their teachers.

The process undertaken is initiated at the local level through public announcements, pamphlets and a group meeting with teachers, children and community members several days prior to the contest. On the day of the contest, the children bring plant specimens they have collected to the local school. A jury consisting of teachers, knowledgeable and interested community members, and forest staff interviews each child and scores them on their knowledge according to the following criteria: the number of specimens presented and their novelty, the knowledge about plants (such as habitat, growing habits etc), the uses of the plants and presentation style. Winners are awarded prizes such as teaching/learning materials. Follow-up activities include: the creation of a school herbal garden, the creation of a school herbarium, and various displays. The results showed that children possess a remarkable body of informal knowledge about plants, particularly their medicinal uses for humans and cattle. Biodiversity contests of this type have taken place for a number of years in a variety of rural settings but the insights for this paper were mainly gained from two recently concluded contests in rural schools in Maharashtra³.

³ Funding support from IDRC (International Development Research Center) and University of Manitoba, Canada for organizing these events at various stages of my research is gratefully acknowledged.

Recipe contests: Triad of culinary creativity, health and conservation

The idea of a recipe contest was conceptualized and implemented by SRISTI. . Recipe contests designed *mainly by and for women* to document their local knowledge about un-cultivated flora used in cuisine, with some medicinal or health value. The rural and tribal women, engaging in such interactive knowledge creation and exchange, have opportunities to demonstrate their culinary creativity and local knowledge with regard to wild plant uses. A potential direct benefit is the improvement in health (nutritional and medicinal values of recipes or ingredients used therein) of rural families where quality health facilities set up by the governments are either not accessible or if available, are in a sad state. It also maintains the health of economically poor girls and women, who often have to travel through the woods often in harsh weather conditions as part of their domestic chores and can collect medicinal plants at the same time. In forests, deserts and mountains, women from poor tribal areas often possess an outstanding knowledge of local plants and their uses in sustainably managing their domestic health, agriculture, livestock and natural resources. The knowledge of rural women, does not just contribute to the improvement of livelihood, health and nutrition, but holds potential for the sustainable management of natural resources.

These contests are often organized among village women, ⁴who are asked in advance to make new recipes, using unconventional and un-cultivated/wild flora. Each dish will be judged using criteria such as: i) number of different plants/plant parts used, ii) conservation value, ii) taste, and iv) the participant's knowledge of the different plants/plant parts used in the dishes. The idea of the recipe contest is publicized through pamphlets or appropriate available local media such as puppets, village gatherings etc. On the day of the contest, the participating women bring the dishes and/or the methods of preparing them (if these plants are not available in a given season/year/location). A local jury consisting of local knowledgeable women experts, community leaders, local healers, and NGO representatives is set up to evaluate the participants. The winners are awarded prizes in the form of a certificate and/or kitchen utensils etc. in a public gathering in the village. The winning recipes are displayed and shared with local communities and schools. A successful recipe contest would involve about 12-15 women from a village or 4-5 mother-daughter teams. Such dishes often represent the wise use of wild vegetables such as dishes with special nutritional values; dishes that help to cope with extreme seasons and calamities, dishes with medicinal values etc.. The first contest was organized in January 2004, at Amboli village, Sidhudurg district, and the second was organized in August 2004, in the tribal village of Baripada in Dhule district.

The community-based plant diversity monitoring register of Baripada

Baripada is a small remote, tribal village of 101 houses (population less than 700), is located at the border between Maharashtra and Gujarat. In response to the emerging crisis of shortage of firewood, food and water in the nearby forests of 445 hectares, caused by indiscriminate cutting of teakwood trees by outsiders, a village youth called Chaitarm Pawar had mobilized the community and formed an informal village forest protection committee in the year 1993. They crafted and enforced an interesting set of access, resource-use, and conflict-resolution rules to prevent pressure on this reserved forest. ⁵. The forest department after realizing the community spirit legitimized the informal village forest protection committee into a joint forest

⁴ In a recent modification, a recipe contest broadened its scope in the form of a traditional food festival organized by SRISTI that invited urban women with the intention of revitalizing the traditional recipes, the knowledge of which is eroding at a rapid rate due to various reasons.

⁵ For description on these rules, please see Honeybee, Vol.15 (2): 7-9

management protection committee in 1999. The results were revealing and brought international recognition when the Rome-based International Fund for Agricultural Development (IFAD) honored them for their outstanding community-based conservation and development work in 2003. After this success the villagers realized the need for continuous monitoring of the plant diversity within the forest and therefore engaged in the collection of baseline data on plant diversity in the forest. The next stage was that of community-based management of plant diversity with the forest department. This led to a joint exploration by local youths, healers and university teachers from the botany and zoology departments from Pimpalner and Sakri towns for collaborative learning about the mapping of plant diversity. In September 2004, a focus group discussion among all partners to decide on a site for demonstration was held. An area of 0.50 acres consisting of dense mixed vegetation was thus identified by the local healers, Baripada villagers and the team of scientists. After careful consideration of potential sites, it was finalized that a plot of 10 sq meters would be ideal for laying down the quadrant. The skill of marking, plotting and recording of plants in a zigzag fashion was demonstrated on the selected site. It was decided that individual healers and village youths who have knowledge of local plants would carry out the recording of the observations. The recording format was collectively decided, as described in Table 1:

Table:1 The Structure of Plant diversity register in Baripada

Site 1			Plot 1	
<i>Local Name of Plant</i>	<i>Number of particular plants</i>	<i>Botanic Name</i>	<i>Local use (most frequent) as reported by healers local experts and members of forest protection committee</i>	<i>Remarks (status such as rare, significantly reducing, new growth etc)</i>
Plant1	1...n			
Plant 2	-Do-			
Plant 3	-Do-			
:				
Plant N				
Site 1			Plot 2	
Plant1	1...n			
Plant 2	-Do-			
Plant 3	-Do-			
:				
Plant N				
Site 1			Plot 3	
Plant1	1...n			
Plant 2	-Do-			
Plant 3	-Do-			
:				
Plant N				

Note: Same format applied to all fourteen sites.

A simple code of conduct was deliberated and followed. For example, each local healer would take turns in counting the number of the plants that s/he first reports. Once s/he completes the counting of a particular plant, s/he would then move on to the next plant that has not been reported so far. The botanists and zoologists guiding the exercise, decided to record the information in Marathi. Each plant should be collected with flowers and fruits, for easy identification. The order of counting should be from smaller size to bigger ones (first creepers and lastly trees). After the counting is done, all the members of the team would move randomly within the plots, so that any unlisted plants would not be left out.

The forest protection committee after a couple of meetings with local healers and shepherds finalized the 14 different sites capturing the geographical variations, as samples. From each such site, three plots (10 Sq Mt each) would be laid. Three teams of fifteen people, each team having five members consisting of local healers, village youths and members from the forest protection committee were formed. Within two weeks, a vegetation mapping of all the sites was carried out. The register was formally inaugurated in a village level workshop in October 2004, which was attended by local healers, primary school teachers and children, forest staff, Ayurvedic practitioners, government officials from the district agriculture department and local NGOs. It helped generate useful policy recommendations for community-based conservation. Some simple rules for the use of the information provided in the community register were also formed. The villagers have decided to monitor the status of plant diversity every two years from the same sites.

The features of communication strategies, the target audience (in this case the underprivileged groups) and the key barriers addressed have been highlighted in the following table.

Table 1: Evaluating methods: Have they served the purpose?

Features	Biodiversity contests	Recipe contests	Community Plant Diversity Register
<i>Communication Strategies</i>	<ul style="list-style-type: none"> ♣ Printed pamphlets and verbal announcements followed by informal discussion with school children and walks. ♣ Orientation to teachers ♣ Orientation to local community leaders including local experts 	<ul style="list-style-type: none"> ♣ Printed pamphlets & verbal announcements followed by informal discussion with women ♣ Orientation to local village women's groups such as self-help ♣ Orientation to local women experts and community leaders 	<ul style="list-style-type: none"> ♣ Orientation to village community leaders and local healers ♣ Discussions with formal scientists— botanists and ecologists ♣ Local demonstration/hands-on training on 'how-to' and 'where'
<i>Targeted underprivileged group</i>	<ul style="list-style-type: none"> ♣ Primary school children and girls in rural and tribal areas ♣ Local ecological experts such as healers ♣ Primary school teachers 	<ul style="list-style-type: none"> ♣ Rural and tribal women, particularly ♣ Illiterate girls and women ♣ Village women's groups 	<ul style="list-style-type: none"> ♣ Economically-disadvantaged rural community ♣ Tribal communities ♣ Local healers and un-employed village youths
<i>Barriers addressed</i>	<ul style="list-style-type: none"> ♣ Language (regional) ♣ Engaging local participation: the less-articulate (healers and educationally-challenged children) ♣ Bringing together multiple stakeholders (e.g. teachers, local healers and school children) with varied interests and knowledge ♣ Recognition to local knowledge systems ♣ Platform for exchange and positive action between local knowledge and school-based knowledge for ensuring local conservation ♣ Updating school-based environmental education by chronicling local uses of plants (such as eco-indicators) and collaborative action with communities for conservation ♣ Intergenerational transmission of local knowledge maintains the stake of the younger generation 	<ul style="list-style-type: none"> ♣ Language (regional) ♣ Recognition of women's local knowledge ♣ Engaging local participation of the less-articulate (women, particularly tribal, and from weaker social groups) ♣ Bringing together multiple stakeholders (e.g. knowledgeable elderly women, community leaders and village women groups) having varied interest and knowledge ♣ Intergenerational transmission of local knowledge maintains the stake of the younger girls in local knowledge and conservation 	<ul style="list-style-type: none"> ♣ Language (regional) ♣ Intergenerational transmission of local knowledge maintains the stake of village youths ♣ Platform for exchange between local knowledge and formal knowledge for ensuring local conservation ♣ Intergenerational transmission of local knowledge maintain stake of village youths in local conservation and knowledge ♣ Educating the forest department by chronicling local uses and monitoring of plants leads to collaborative action for sustainable co-management ♣ Recognition to local knowledge systems

There is a great deal of similarity in the communication strategies adopted by all three approaches. Keeping the target groups informed right from the inception of the program, through a mix of locally appropriate communication media is the most common communication strategy across all three methods. Since all three were targeted at different village level stakeholders, their priorities were naturally different. For example, the biodiversity contest was designed for school children and targeted at informing, interacting and transforming school-based EE, while the recipe contest was targeted towards facilitating intergeneration transmission and recognition of commonly-discounted women's knowledge systems in the local conservation agenda. The use of the local language and resources including knowledge, creating a platform for dialogue among multiple stakeholders, encouraging intergenerational interactions by building upon local knowledge systems are a few of the enabling conditions for managing the barriers for effective communication and thereby creating a niche for socially critical EE.

Conclusion

Socially critical EE will be more useful and practical, if it relies on approaches that build on local knowledge systems. Approaches like biodiversity contests, recipe contests and community-based plant diversity registers help to create a platform on which local knowledge systems can inform, interact and transform with formal knowledge and connect the holders of these multiple knowledge systems in a collaborative and cooperative learning and action. To do so, these innovative approaches will have to be tailored to remove constraints in establishing effective communication with the underprivileged and less-articulate group of children, women and socio-economically disadvantaged tribal communities. The enabling conditions under which these methods function are their simplistic local ways and down-to-earth approaches of communication, promoting links between and interests in more than one generation and their knowledge systems and creating a congeniality for local knowledge systems, to nurture and interact with formal knowledge systems. Biodiversity and recipe contests are however, more process-oriented methods, which helped create platforms for future actions, while the community-plant diversity register is more action-oriented method, which not only helped in recognition of local knowledge but also combined it with formal knowledge and created a model for sustainable co-management of local biodiversity. These methods are however, means and not ends and therefore, require constant experimentation and innovations considering the different ecological and socio-cultural contexts.

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