

# Empowering the Rural Poor to Develop Themselves: The Barefoot Approach

*Innovations Case Narrative:  
Barefoot College of Tilonia*

Two roads diverged in a wood, and I—  
I took the one less traveled by,  
And that has made all the difference.

—Robert Frost, “The Road Not Taken,” 1920

Empowering the rural poor means developing their capacity. It means developing their skills so they become competent decision-makers with the confidence to act on their choices. Thus far, conventional approaches to such empowerment have failed. The approach that big donors and Western-conditioned experts have taken to reach the poor—forget about allowing the poor to develop themselves—has been patronizing, top-down, insensitive, and expensive. It excludes the marginalized, the exploited, and the very poor and keeps them from making decisions on their own. Thus it disempowers them, leaving them dependent and hopelessly ill prepared to improve their lives. Moreover, these “patrons,” however well intentioned, have refused to learn from their mistakes. They are stuck in a rut that wastes money on a process that simply has not worked.

But there is another way to empower the poor. It starts with giving the poor the right to decide for themselves how they want to improve their quality of life. They must have the right to choose whether they want the urban experts to come into their villages with “modern” ideas. They must have access to information and knowledge and the right to decide whether they would like to be independent of advice and skills from outside when they already have such incredible technical,

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*Mr. Roy and the Barefoot College are the recipients of numerous awards including the Skoll Award for Social Entrepreneurship, the Stockholm Challenge Award for Information Technology, and the Tyler Prize for Environmental Achievement. Mr. Roy was also selected by the Schwab Foundation for Social Entrepreneurship as an Outstanding Social Entrepreneur in 2005.*

### **Box 1. The Roots of Barefoot College**

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Registered as the Social Work and Research Centre (SWRC) in February 1971, the Barefoot College started in a small village called Tilonia 350 kilometers southwest of Delhi in Rajasthan state. The college began with no high expectations. The idea was to listen and learn.

We wanted to get the farmer and the “professional” together so they could interact and learn and unlearn from each other. Though this was unheard of in the early 1970s, we brought together a geologist, a geophysicist, a cartographer and a gentleman farmer in one place to address a need for water. We started with a survey of 110 villages spread over 500 square miles to examine their ground-water situation. In 1974 we submitted our findings to the government, which used it as the basis for a decision to extend grid electricity to 100 villages in the area where we were working. We were delighted that in two years we could make such a difference.

But with urban-trained professionals vastly outnumbering the rural colleagues in the organization a crisis was inevitable: in ideology, in approaches, in decision-making, and in ways to manage the organization. Between 1977 and 1979 this crisis resulted in many professionals leaving the organization, and we had to look inward to see what strengths we had.

Also at about this time, in 1975, Yogavalli left Tilonia, as she got married. Subsequently, in 1975-1976, Shukla Kanungo had to leave SWRC, as she wanted to work in Sri Niketan in West Bengal; in 1977, Manya got married and left Tilonia; in 1983 Aruna decided to leave SWRC because she wanted to get involved in non-party political processes.

By 1978 we had antagonized the rural rich in the surrounding villages. Bypassing the rural hierarchy, we had gone directly to the rural poor to provide services, thus creating tensions between the marginalized and the local politicians. By tackling corruption, we exposed ourselves to many questions in the state assembly about our intentions and whether we were needed at all. Wanting to bring some change we had miscalculated on our timing and speed. It was too

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human, and even financial resources within their own communities. They can even decide whether some knowledge would be useful if they could adapt it to serve their needs. What they need is the opportunity and space to develop themselves. When provided with that mental and physical space, the poor can achieve wonders without any outside professional interference or advice.

The trouble is that, even though established approaches have failed to achieve sustainable improvements, people are reluctant to turn the top-down process on its head and start from the bottom up. Few operational models provide a contrast that demonstrates the alternatives. But outside the usual box are other more cost-effective approaches that draw more on the grassroots. There are ways to build on local knowledge and skills. And these approaches can be replicated on a large scale

soon to take on such serious challenges.

A severe political crisis exposed our vulnerability as an organization. We were far too dependent on the government. The place where we were working was an unused training center, which we had leased at 1 rupee a month. Our many questions to the state assembly had made the bureaucrats nervous; it was only a matter of time until they sent a letter informing us that we had to leave. In 1978 the government asked us to vacate the premises by January 1979 because they had decided they would like to put it to some other use.

Fortunately, in September 1978, out of the blue, Robert McNamara (then president of the World Bank) and McGeorge Bundy (then president of the Ford Foundation and former National Security Adviser to President Kennedy) decided to visit Tilonia. They wanted to see how the poor lived. They spent two days living as we did: sitting, eating, and sleeping on the floor, under the stars, and using kerosene lamps for lighting. The government was horrified when they heard, but Bob has said he remembers the visit fondly. Their visit made the government think twice. Tensions between Barefoot College and the politicians eased dramatically. Then, in January 1979, Mrs. Indira Gandhi came back to power and the order to vacate was cancelled.

In hindsight, had the Barefoot College not gone through these crises it would never have come out as strong as it did. In the eyes of the rural poor we established a certain degree of credibility in taking on the local dominant political leadership and surviving. As local people started to be a part of the collective decision-making process, the thinking within Barefoot College changed fundamentally. The college recognized that its dependence on urban expertise and paper credentials did damage to the mindset of the rural poor, in effect preventing them from coming out of poverty on their own.

We also decided to take on the local political structure by persuading the local staff to run in the panchayat (village) elections as “independents.” The people called us the Green Party because we used a tree as our symbol. Our presence in the political process shook the political environment when several of our candidates won.

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by taking the poor into our confidence and reducing their dependency on inappropriate knowledge, skills, and expertise from “outside.”

Since 1971, the Barefoot College has been pioneering such an approach. By giving the responsibility to choose and apply and adapt technology to rural communities, by handing over total control to barefoot educators, health workers, water and solar engineers with roots in the community, and by showing respect in the faith and competence of ordinary people to provide tangible benefits to their own people, we have shown there is a better way. Barefoot College has demonstrated the enduring value of a process and system that is totally owned by the actual beneficiaries.

The ideas have helped lift the marginalized communities out of poverty and given them tremendous hope. By bringing the value of community knowledge and skills into mainstream thinking in modern technology, engineering, and architecture, Barefoot College has revealed the relevance of development that is community owned and community managed. We have demonstrated what we mean by sustainability. We have shown that, as the late president of Tanzania, Julius Nyerere put it, “People cannot be developed. They develop themselves.”

## ORIGINS OF THE BAREFOOT IDEA

In 1967, I went to live and work in the rural village of Tilonia in Rajasthan, India, after receiving the most elitist, expensive, snobbish private education that any Indian could possibly receive. When I arrived, I remember being shaken by the questions the elders asked me:

Are you running from the police? Did you fail in your examinations? You did not manage to get a government job? Is there something wrong with you? Why are you here? Why have you come from the city to this village? There is no one here but the very old, the women, and the very young. The youth have left.

The youth had left to look for jobs—any job that would take them away from the village—because the predominant value system denigrated rural life, skills, and traditions and offered little hope of improved incomes or quality of life. They had certificates in their hands from uninspiring mediocre technical institutes and colleges located in small towns producing “graduates” by the thousands with high expectations. These youths thought they were going to get well-paid, secure jobs in the cities. Instead, they swelled the ranks of the educated unemployables living in the slums in India.

Why unemployable? Because their paper degrees had no value. The certified doctors, teachers, and engineers produced by the thousands every year are paper experts without any practical experience. They are caught up in a system that is not accountable to the people it is supposed to serve and produces insufficient jobs to absorb the number of job seekers. Civil engineers build roads that do not last; water engineers build tanks that collapse or crack or deplete the water resources and cannot be used; doctors focus on curative approaches and know little or nothing about preventive health. So in the absence of jobs but still hoping for any job, they live an inhuman existence in appalling urban slums. The humiliation and scorn they would face on returning to the village prevent them from going back. Anyone going back to the village is considered a failure and the shame is shared by the whole family.

When the youth fled, they took with them the dying hopes of their parents—weavers, blacksmiths, potters, builders, carpenters, farmers—to pass on the traditional skills to the next generation. They left behind not only their families but also the knowledge their elders had collected over the generations to adapt to local con-

## **Box 2. The Mission of Barefoot College**

Barefoot College has committed itself to the following work in poor rural communities:

- Raise the standard of living.
- Improve the quality of life.
- Upgrade people's existing traditional skills and knowledge through training.
- Guide the community in taking responsibility for providing some of these basic services.
- Struggle and campaign for justice and the rule of law.
- Be transparent and publicly accountable to the community in whose name we receive funds.

ditions. This was knowledge that no formal educational system valued, but it was critical for developing a community with dignity and self-respect. The formal educational system had made them look down on their own roots.

For me, living and working in the villages for five years as an unskilled laborer digging and blasting wells and meeting with very ordinary poor people was an extraordinary experience. Between 1967 and 1971, I went through an “unlearning” process that provided the seeds for the humble beginning of the Barefoot College (see Box 1). Over the last 35 years, what we have “unlearned” is our gross underestimation of people's infinite capacity to identify and solve their own problems with their own creativity and skills, and to depend on each other in tackling problems. What I learned is that empowerment is about developing that capacity to solve problems, to make choices, and to have the confidence to act on them.

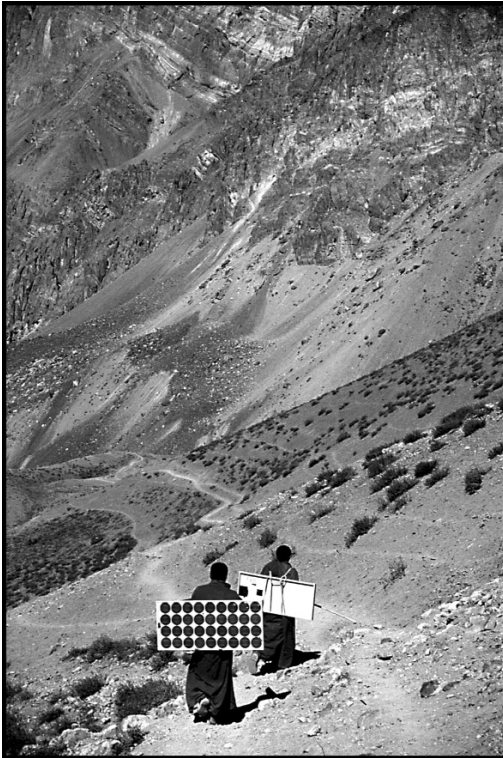
By 1974, the idea of Barefoot College began to take a more concrete form. Aruna, my wife, resigned from the Indian Administrative Service (IAS) and became part of the Tilonia team. We were joined by Manya Jayaram and Yogavalli Rao, who both came from the Tata Institute of Social Sciences (TISS) in Mumbai, and together started a basic preventive health program. Shukla Kanungo, also from TISS, helped start the Informal Education Program, which ran schools for children who had dropped out of school. The night schools, aimed at children who are obliged to miss school in the daytime because they are performing essential tasks for the family, were started in 1975.

On a different front, the college understood the specific real needs of the rural poor (see Box 2). These people needed to assert their identity and demonstrate that their knowledge and skills were not outdated, second-rate, or irrelevant. They needed a college dedicated to their specific and special circumstances, and one located in a remote rural area. They needed a place where they could feel a sense of ownership, where their self-respect and self-esteem could be developed gradually over the years. The Barefoot College acts as a counterpoint both to the incredible ignorance and arrogance the formal system displays and to its belief that it

makes an indispensable contribution to tackling poverty; in reality that approach is counterproductive, even dangerous.

### WHAT IS BAREFOOT COLLEGE?

As an organization, Barefoot College is the only college in India that follows the lifestyle and work style of Gandhi. It is the only college built by the poor, for the poor, and for the last 35 years, managed, controlled, and owned by the poor. Underlying the Barefoot approach is a firm belief in the knowledge, creativity,



practical wisdom, and survival skills of the rural poor—possibly the only answer to making communities self-reliant and sustainable. For an unemployed and unemployable semi-literate rural youth to be providing vital services in a village, replacing an urban, paper-qualified doctor, teacher, or water engineer is a totally revolutionary idea. And yet, this is what happens at the Barefoot College every day.

It is the only college where paper degrees, diplomas, and doctorates are a disqualification because people are judged not according to their degree of literacy or academic distinction, but by their attributes: honesty, integrity, compassion, practical skills, creativity, adaptability, willingness to listen and learn, and ability to work with all sorts of people without discriminating. The term “barefoot”

is both symbolic and literal. Those who work, teach, learn, and “unlearn” and provide a technical skill without a paper degree issued by the Barefoot College go barefoot and remain so after they return to their own villages. Their goal is not to change their lifestyle but to gain the basic skills they need to provide to their own communities a vital service, one that urban professionals are currently trying to provide, most often unsuccessfully. Meanwhile they are maintaining a healthy and sustainable lifestyle for themselves and their community.

The Barefoot College is a radical departure from the traditional concept of a “college” because it encourages a hands-on learning-by-doing process of gaining practical knowledge and skills rather than written tests and paper-based qualifications. It promotes and strengthens the kind of education one absorbs from family, community, and personal experience. It deliberately confers no degrees, with a

view to reversing migration. If one can improve the quality of life in one's community by providing a vital service, why would anyone in their right mind want to live an unspeakably miserable existence in the urban slums? In any case, because barefoot professionals do not have paper certificates, no one in the urban areas, sadly, will seriously value their skills.

The ideology of the Barefoot College four key components: Alternative Education, Valuing Traditional Knowledge and Skills, Learning for Self-Reliance, and Dissemination.

### **Alternative Education**

First, the Barefoot College demystifies education, taking Mark Twain to heart: "Never let School interfere with your Education." Mahatma Gandhi believed that giving more importance, value, and relevance to practical skills and applying traditional knowledge to solving day-to-day problems was essential for the development of rural India. Gandhi's thoughts live on in the Barefoot College. Living conditions for everyone are simple and down to earth (literally!). Everyone sits, eats, and works on the floor. No one can receive a salary of over \$150 a month.

### **Valuing Traditional Knowledge and Skills**

Second, the Barefoot College gives priority to the ideas, thoughts, and wishes of the rural poor. The college respects and emphasizes the importance of traditional knowledge, skills, and practical wisdom. It values keeping the oral tradition alive from father to son. This type of education is deeply rooted in long experience facing the challenges of living in particular circumstances and can never be replaced. The focus of the college is to make the young men, women, and children living in the village aware of this precious resource so that eventually they will stay in their villages and not migrate to the cities to end up living in a slum.

This is a major reason why the college places no importance on urban experts with paper degrees and qualifications who want to participate in it. In fact, people may be disqualified if they have too many paper qualifications. Sadly, thirty years of exposure and experience in rural India has taught us that most people with high-level paper qualifications are unfit (and misfits) when it comes to living and working in remote rural areas. They do not have the patience, humility, listening skills, open minds, tolerance, or capacity to show respect for traditional knowledge and skills.

### **Learning for Self-Reliance**

Third, Barefoot College enhances the self-confidence and competence of the poorest of the poor by providing them access to learning that enhances their ability to serve their own community, thus making them more confidently self-reliant. Over the last 35 years, thousands of unemployed and unemployable rural poor have been selected and trained as barefoot educators and technologists.

The criteria for selection are simple. We select only those village youth—both

men and women—who are illiterate, semiliterate, or barely literate and who have no hope of getting the lowest government job. They have been trained as “barefoot” educators, doctors, teachers, engineers, architects, designers, communicators, hand pump mechanics, and accountants. They have demonstrated that “experts” from the urban areas with paper qualifications are not really required to make villages self-sufficient and sustainable because these trained “barefoot” experts can do the work themselves.

Two important parts of the emphasis on self-reliance are decentralization and transparency. The very structure of the college in Tilonia is decentralized: a full-time director is assisted by a team of people in charge of different sections, each looking after their work independently while consulting with colleagues when needed. Each person has their own budget and controls their own bank account. Once a month, the director meets with all the people in charge of the field centers as well as the sections to review the work done in the previous month and see what needs to be done next. At this meeting, they address problems of coordination between the sections. All the decisions are recorded in minutes that are circulated to everyone present.

Field Centers (FC) are situated in villages in all four directions from Tilonia in Silora Block Ajmer, a cluster of villages in Rajasthan where the organization is working. Each field center has a campus and is based in a village. There a team, consisting of field workers and their coordinator, plan and implement community-managed initiatives at the village level. Each FC has a work radius of 15 to 25 villages, where initiatives are taken up by village-level committees. At the regular monthly meetings of their village-level committees, they endorse the collective decisions made to implement those initiatives.

The FC coordinators are collectively involved with the committees in organizing those monthly meetings. The four most common types of committees are village water committees, village education committees, children’s parliaments, and women’s groups. In principle, the members of all the committees are the poorest of the poor and they include equal numbers of women and men. The committees have financial powers, and three members, including a woman, jointly operate the bank accounts. The affiliated Barefoot Colleges have integrated this process of decentralized decision-making as they collectively plan and implement their community-managed initiatives.

Barefoot College also stresses transparency and accountability. It is the only grassroots organization in India that holds public hearings and shares usually confidential financial information with the community of all those associated with its work. This information includes the sources of funding, the amounts received, and the ways funds are spent. Staff bank accounts are also published. The organizations associated with the Barefoot College family believe we are accountable to funding agencies and to the community in whose name the funds are received. All audit statements are open to the public.



## **Dissemination**

Last but not least, the college is being asked to replicate its approach all over India and the world. So far, 20 colleges have been established in 13 states of India. In keeping with the Barefoot philosophy, each operates independently, defining its own curriculum but keeping a few non-negotiable tenets at the core of their operations:

*Equality.* All people in the college are equal regardless of gender, caste, ethnicity, age, and schooling. In practical terms, this means the college has no hierarchy. The founder and director of a college have the same say and status as the new barefoot accountant who has just joined it and the physically challenged barefoot operator who answers the phone.

*Austerity.* Everyone in the college receives a living wage, not a market wage. The maximum wage anyone can earn is U.S. \$150/month; the minimum is about half that at 73 Indian rupees per day. Living conditions focus on basic needs and are designed to minimize waste.

*Collective Decision-Making.* Decisions are made collectively, not by individuals in isolation. For example, the salary each person receives is decided on by everyone in the organization; the process is based on a points system in which each person evaluates himself and everyone else according to several criteria.

## **BAREFOOT BUILDS ITSELF**

For several reasons, the timing was right to build a college with a difference. There was a general agreement that we should never allow the government to politically blackmail the college and apply pressure as it did in the late 1970s. We needed a place of our own to give us the freedom to take up any cause, fight any battle, support any community, defend any right, and carry out any campaign that would bring power and courage and hope to the rural poor.

The second reason was to demonstrate the value, importance, and relevance of traditional knowledge, village skills and the practical wisdom of the poor. We needed to have a place where people around the world could come and see it for themselves. Well before the college came into existence, the poor rural communities had been able to preserve, encourage, and promote skill-building for barefoot architects, both male and female. Now these architects undertook the building of the Barefoot College campus itself.

Work on the new Barefoot College campus began in 1986 and concluded in 1989. Remarkably, it was designed and built by the very same poor, rural, often semiliterate villagers it trains. At Barefoot, a group of twelve barefoot architects learned to apply their traditional skills to modern challenges while still maintaining their rural sensibilities about resources, tools, and technology. They designed the main campus under the guidance of Bhanwar Jat, an illiterate farmer in Tilonia (see Box 3). Twenty village masons assisted. The campus, including 2,800 square

**Box 3. Bhanwar Jat's Story**

"Nobody in our family knows how to read and write. We are three brothers, all farmers. We have 15 acres of agricultural land. Now all our children go to school. This is the first time such a step has been taken and I am glad. I joined Barefoot College twenty years ago in 1977. I used to take water to the houses with Kanaram and his donkey. Because I was a farmer I was asked to work on the fields to grow food for the Center. At that time I was working on the poultry farm, looking after chicks for one year with Vasu. It was also my job to take people from the Center on a tractor to the night schools.

"In 1986 I was asked to build the New Center. I was—and still am—illiterate. But that did not worry me. I had already done so many jobs at the Center. This was just one more. It took one year to dig the foundation. I was asked to supervise the work of about 50 rural masons and over 100 day laborers. It took two years to build everything. An architect tried to draft blueprints but they were changed so often that they were useless in the end. The project was a joint effort. Everyone who was going to live there was consulted. Everyone's views had to be respected. So the location of doors, windows, and roads changed every day. Rafiq, the Muslim blacksmith, made the doors and windows in his rural workshop in Tilonia."

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meters occupied by buildings and 35,000 square meters of land, cost \$21,000 to complete.

The architectural team believed, like Gandhi, that there is a difference between literacy and education. This is the philosophy that guided every step of the campus's construction and later all of the activities that would take place within it. The team's own life education—the skills and techniques they learned from living and working in their communities—had outfitted them with valuable knowledge and had prepared them to work on the design and construction effort.

In this work, an ability to read and write simply was not required. For instance, the team refined and redrew plans and rough sketches on the ground and collectively approved the idea of accommodating traditional building techniques and specific site issues. They measured the depth of wells and floor spaces using their arms and hands and a traditional measure called the hath. A hath is about 18 inches, or the length of the arm from the elbow to the end of the middle finger.

The college community included male and female engineers, hand-pump mechanics, traditional puppeteers, village masons, midwives, and night school teachers. They all sat down and contributed to the ideas that went into the concept as well as the building of the actual college. They felt strongly that if they had to live and work in the college, they had every right to design, shape, and build it together.

The buildings are located around traditional highly decorative courtyards. The Barefoot architects insisted that the buildings face the wind, so that the natural cir-

culuation within the courtyards would keep them cool. The women wanted a place to cook in the open courtyards, so one was provided. Local materials like stone were used throughout the building process, with lime mortar for load-bearing walls and stone slabs for the roof. Women drew on their traditional knowledge and materials for waterproofing the campus in a process that they insisted on carrying out in secret. To this day, except for unusually heavy rains, it has not leaked!

The Barefoot architects demonstrated that it was possible to use traditional knowledge, local materials, and village skills. In the process, they showed how relevant and important their practical wisdom was for preserving and conserving the architectural skills that had been disappearing from most traditional communities.

With great foresight, the Barefoot architects connected the roofs of all the buildings to collect rainwater in a 400,000-liter underground tank. This was quite remarkable in the late 1980s, when many professional architects were still ignorant about the importance of collecting rainwater as part of their basic designs. Seating for 2,000 people was constructed over the tank; it overlooks a stage where performances (puppet shows, street theatre, musical evenings) are held regularly.

In this same project, village blacksmiths fabricated more than 70 geodesic domes. The celebrated American architect Buckminster Fuller designed the geodesic dome, but semiliterate architects and blacksmiths fabricated them on the Barefoot College campus, giving it a sustainable makeover. Deforestation is a major threat in the area as traditional housing has made wood a scarce resource. Rafeek Mohammed and seven Barefoot architects developed and built domes fabricated from discarded agricultural implements, including bullock carts and pump sections. The domes were covered with thatch, giving a traditional look to a new idea. Geodesic dome structures are currently being used for a pathology lab, meeting halls, a dispensary, a milk booth, and an Internet café; they have also been used in the desert for a variety of purposes that have benefited thousands of people. In fact, some of these domes are collecting 200,000 liters of rain water in the Himalayas.

Barefoot College is also the only fully solar-electrified college based in a village in India. Starting in 1989, barefoot solar engineers installed a total of 40 kilowatts of solar panels and 5 battery banks, each containing 136 deep-cycle batteries. The solar components (inverters, charge controllers, battery boxes, stands) were all fabricated in the college itself.

## STRUCTURE AND FUNCTION OF THE COLLEGE

The process used to build Barefoot College reveals how involved the community is in running it. Members of village committees are responsible for planning how to implement and monitor all the college's initiatives. Once plans are decided on at the village level, they must be endorsed by members of the rural communities, especially the poorest of the poor, and all decisions are made collectively.

The village committees are responsible for the day-to-day administration and

have the financial power to purchase materials and disburse honorariums. For example, village water committees plan and implement the construction of rain-water harvesting structures in rural schools. They are involved in deciding on the location and site and in selecting the poorest of the poor to work as wage laborers on the construction.

In places where a piped water supply system has been installed, village piped water committees manage and control the systems, collecting monthly contributions from end-users with tap connections. They are responsible for purchasing all the materials and disbursing wages to those involved in construction and maintenance. Village environment and energy committees are involved in selecting semi-literate and literate men and women to be trained as barefoot solar engineers (BSEs). They are responsible for the day-to-day functioning of solar lighting units, collecting monthly contributions from end-users and disbursing honorariums to the BSEs who repair and maintain the solar lighting units.

### BAREFOOT FOCUS AREAS

Barefoot focuses inward on building itself, but it is primarily focused outward, to help rural communities thrive with dignity and self-respect. This involves community input based on assessment of their priority needs. Currently, Barefoot is focusing on six areas: education, drinking water, alternative energy, the environment, empowering rural women, and traditional communication.

#### **Education**

One focus area is education, especially training barefoot teachers, who are selected by members of the rural communities where the night schools are situated. Most often, unemployed rural youth are selected to teach at the pre-primary and night schools. Once they are selected they participate in an initial 30-day residential training camp; then they start their involvement with children by teaching at the night schools. They participate fully in deciding on the curriculum, which is directed at practical learning that fits local circumstances and builds on local knowledge.

Barefoot College coordinates these night schools, which have been established in six states in India: Assam, Orissa, Uttaranchal, Madhya Pradesh, and Bihar, as well as Rajasthan. They form a network of more than 450 barefoot teachers, including 100 women; their innovative educational process provides access to nearly 8,000 children, including 6,000 girls. Nearly 3,000 boys and girls attend the more than 150 night schools; most are shepherds who must attend to their families' livestock during the daytime, and who are coming to school for the first time. Rural youth with disabilities fabricate all the teaching and learning materials for these schools out of waste; the list includes chalk, blackboards, seating mats, and even science teaching materials. The college collectively coordinates these night schools through its affiliations with community-based voluntary organizations in the six states. In Rajasthan, the night schools are coordinated by the Barefoot College in Tilonia.

In addition, a children's parliament, consisting of representatives elected by the students, elects its own cabinet. It helps to supervise, monitor, and administer the night schools. It meets monthly to discuss emerging problems and decide on action. This gives the children very practical experience in governance.

### **Drinking Water**

Another primary focus is on drinking water. Despite the popular belief that technology is required to solve pressing water shortages, our experience is that villagers can apply their own knowledge and know-how and succeed. For instance, many engineers believe that problems of water shortage and potability can be solved only by building big, expensive, deep-well drilling rigs to tap groundwater or, alternatively, through piped water supply systems drawing on a permanent water source many kilometers away.

Instead, Barefoot turns to the simple but effective system of rooftop rain water harvesting (RRWH). This involves catching rainwater where it falls, using the rooftops of schools and other buildings, and channeling it into underground leak-proof tanks made of locally available, low-cost materials. RRWH is a viable, low-cost way of providing drinking water and sanitation to remote rural communities. It has proven possible to collect and store 100,000 liters of rainwater at a cost of 10 cents a liter.

While rural people have been harvesting rain water for centuries, the college pioneered the widespread use of this practice to meet the drinking water and sanitation needs of hundreds of rural poor communities throughout India. The college supports people in two types of rainwater harvesting. Most of the rainwater is harvested for drinking and sanitation, mostly from rooftops. In addition, smaller amounts are harvested to recharge the supplies of groundwater.

The benefits to communities adopting this scheme go far beyond water management. Globally, many schools in rural communities lack water for drinking and sanitation. These schools typically do not have simple hand-flush toilets. This fact has educational implications: the lack of toilets keeps girls from coming to school, because they need the privacy a toilet can provide. But girls who do not attend school are more likely to become mothers whose children who do not attend school. In addition, for both boys and girls, the lack of water at school means they must spend time fetching water instead of learning. Solutions based on local groundwater or other water sources are often too costly and foster dependency on external resources, knowledge, and skills. A practical solution is for community members to come together and contribute labor and materials to construct their own RRWH structures.

All the night schools run by the Barefoot College have underground tanks collecting rainwater so that children have access to safe water and need not walk for miles to fetch water during school hours. The college's night schools are housed mostly in buildings that house government primary schools during the day, as well as community centers and geodesic domes the college constructed using commu-

nity contributions in cash, kind, and voluntary labor.

Rainwater harvesting has also had a considerable impact on women and children. Over the years, many rural women have showed their leadership potential at the panchayat (local self-government) level. They have been elected to the panchayats as chieftains and ward members during the elections in 1995 and 2000. In addition, now that safe drinking water is available at schools, many more girls attend, often double the previous numbers. Also, the daily attendance of both boys and girls throughout the year has increased by about 50 percent.

While these results have received recognition and acclaim in many quarters, the college's work in RRWH has certainly met resistance from water planners and engineers across India. These water "experts" often advocate large and expensive solutions based on the installation of hand pumps, raised water tanks, and piped water supply schemes. They tend to ignore or dismiss the much simpler, community-based method of rooftop rainwater harvesting.

For example, in the mountainous and drought-prone state of Sikkim, water management used to involve allowing rainwater to flow down to rivers in the valleys and then using heavy-duty pumps to propel the water back up the mountain through a series of pipes to provide drinking water to remote rural communities. Barefoot water engineers and community members of the village water committee suggested to the chief minister of Sikkim that school children could be provided with safe drinking water by using the school buildings themselves to harvest rainwater, but the state's chief water engineer said the proposal was technically impossible. Using locally available building materials and the traditional knowledge and skills of the villagers in Sikkim, Barefoot architects constructed the first rooftop rainwater harvesting tank in the village of Sadam, located on a mountain peak in south Sikkim. The tank, which has a capacity of 160,000 liters, was constructed in six months.

When they were done, the Barefoot College staff went back to the chief minister of Sikkim and asked him to come inaugurate the system. He was surprised and delighted, and agreed to bring his chief engineer along to show him this system that the engineer had declared technically impossible. As a result of the visit, the chief minister changed the state government's entire policy. He immediately sanctioned the construction of 40 more rooftop rainwater harvesting tanks and approved funds for rainwater harvesting in three schools.

Barefoot water engineers have built over 1,000 rooftop rainwater harvesting structures in 17 states across India with a combined capacity of nearly 50 million liters. This construction has provided gainful employment to more than 20,000 villagers. If and when it rains each year, these systems meet the drinking water and sanitation needs of some 220,000 children in those communities. If the rain is insufficient, the underground tanks can be refilled by water trucks for a part of the year. This simple, cost-effective, centuries-old solution facilitates self-reliance. Local materials and labor can be used, and a village water committee can be empowered to control and distribute the water without depending on the outside

DESCRIPTION	Total number of items
Fixed solar photo-voltaic (SPV) units installed	8,797
Solar lanterns fabricated and distributed	4,136
Night schools provided with solar electricity	549
States/districts where fixed SPV units and solar lanterns are installed	29 districts in 16 states
Barefoot solar engineers trained	207
Villages included	574
Houses provided with solar electricity	10,716
People benefitting from solar electricity (approximate figures)	97,010
Solar energy capacity in kilowatts	528.5 KWp (kilowatt-peak, i.e., peak output of the system)

**Table 1. Solar Electricity Systems, and Components, Installed in India by Barefoot College, Tilonia.**

world for technical, human, or financial resources. It can bring together people from various communities and castes, both rich and poor.

### **Alternative Energy**

The two previous focus areas rely largely on reviving and enhancing the practical traditional skills and knowledge of barefoot builders, hand pump mechanics, architects, and masons. In contrast, Barefoot College has recently drawn on its experience of providing solar electricity on its own campus, in order to embark on another area. It is demystifying modern technology by bringing alternative energy to remote rural villages through solar electrification. Since 1986, the Barefoot College has been promoting the use of solar photovoltaics on a colossal scale all over the country. Rural poor literate or semiliterate men and women from across India and beyond, with little or no educational qualifications, are learning to be barefoot solar engineers (BSEs), installing decentralized solar units at the household level. Taken in total, to date these BSEs have completed energy systems that generate as much electricity as the largest centralized solar power plant in India, the 500 kilowatt plant in Maharashtra. In addition, the Barefoot systems benefit over 90,000 of the poorest households all over India (See Table 1).

In remote mountain villages, electricity is a scarce resource. People survive six months of severe winter with temperatures reaching  $-40^{\circ}\text{F}$ , using only dim kerosene lamps and candles, huddled close to the community stove and sharing the same room with their cattle. In villages in the Himalayas where communities decided to install these systems, they selected 209 people, including 19 women, as

trainees. The trainees went to Barefoot College and trained to become BSEs. These BSEs have now electrified a total of 140 villages. They have installed solar units in 10,000 households covering almost 574 villages across 16 Indian states. Monthly contributions from each family for repair and maintenance, now totaling nearly \$40,000, are being deposited in banks. Members of 139 village energy and environment committees (VEECs) have been trained to monitor the work of the BSEs and make sure the monthly contributions come in regularly.

It is impossible to describe the incredible change in the lives of over 15,000 people who are now using fixed solar units and solar lanterns. To get a 20-liter jerry can of kerosene they sometimes had to walk for two days; that kerosene also had to last them a month. In a remote village in Ladakh, an old woman was asked how solar electrification had benefited her. She replied with a shy smile, "For the first time I can see my husband's face clearly in the winter."

While improved lighting and heating is a great benefit, another priority is generating employment through the use of solar energy. The BSEs have been trained to fabricate solar water heaters and to use solar energy to dry vegetables. Solar-powered spinning wheels have given employment to over 200 women. Ten solar power plants of 2.5 KW each, installed at the rural electronic workshops, have provided power to fabricate charge controllers and inverters. Solar water pumps lift water from the rivers to regenerate wastelands. The BSEs have constructed solar passive houses that retain the heat of the sun when temperatures dip below freezing. In the mountains, these houses serve as schools so that children can go to school even in freezing weather.

### **Environment and Climate Change Mitigation**

Each focus area has multiple benefits. For example, the college's work in water, alternative energy, and education also results in protecting and conserving fragile biodiversity in the deserts of Rajasthan and all along the Himalayas. Barefoot College workers conserve water resources and mitigate climate change. They also make every effort to reduce emissions of CO<sub>2</sub> and related greenhouse gases.

The basic work of the college has other positive impacts on the environment. Solar electricity provides an alternative so people need not use trees and shrubs as fuel for cooking, heating, and lighting. Barefoot workers set an example of living simply and with austerity without abusing and exploiting the available water and land. Thus they promote these ideas among the people they meet. They also control and minimize pollution by sharply reducing the consumption and use of diesel and kerosene for basic needs. Finally, they are implementing a massive environmental education program in the 150 night schools that are lighted with solar lanterns.

The college has concentrated its work with solar photovoltaics in the hot deserts of Rajasthan and in the four Indian states nearest the Himalayas. Several thousand houses, schools, and community centers have been provided with solar electricity in one of the world's most inaccessible and inhospitable regions. They





**Figure 1. Locations of Trained Women Barefoot Solar Engineers in India.**

have prevented several hundred thousand liters of diesel and kerosene from being burned. They have preserved forests and even controlled environmental pollution to some extent. As a result, since 1989, they have kept 1.2 million tons of carbon emissions from entering the atmosphere (See Table 2).

These calculations are based on the use of kerosene for domestic lighting, diesel for generators, and diesel and gasoline to transport fossil fuels. Now, solar electricity makes this use of fossil fuels unnecessary.

### **Empowering Rural Women**

Barefoot College also focuses on empowering rural women in all of its programs. Some programs cover areas such as water and education, where women have traditionally been very active, but their role in spreading solar technology is totally new for them, although it does build on their traditional responsibility to maintain the supplies of kerosene for lighting and fuel for cooking. What is remarkable is that for the first time sophisticated solar technology has been demystified, and simple village women have demonstrated how effectively they can manage and control it to improve their quality of life. They now have the opportunity to develop their competence and confidence to handle technology, providing services to their own community that give them a new level of acceptance and the respect they deserve.

What is innovative is involving the whole community in selecting semi-literate

Number of villages		574
Number of households provided with solar electric units		10,716
Use of fossil fuel per Lamps		63,650
month (in liters)	Generator sets	81,000
	Transport	25,600
	Total	170,250
Average carbon emissions/month (tons)		512
Reduction in emission of carbon (tons)		122,400

**Table 2. Reductions in Carbon Emissions since 1989**

women as engineers to provide a vital and non-traditional technical service in an area not generally associated with rural women. It also requires them to develop systematic leadership skills, persuading the community to pay a monthly contribution for the repair and maintenance of the solar systems they have installed in each house in their own village.

Where this system was first adopted, the household contributions have been coming in regularly for the last four years.

Building on this success, the college recently expanded this same approach to empower a growing number of female BSEs from both inside India and abroad. Older rural women are preferred to men for two reasons. First, they are rooted in their villages and will not migrate to the cities even if their skills could earn them higher incomes there. Second, once they have been trained as BSEs, they are willing to train other women, thus passing on their know-how and skills and leveraging the energy of many women in the community.

Solar technology has also expanded into cooking. Solar stoves can be used for frying, boiling, or steaming—or most anything else one can do on a gas stove. A small solar cooker can match the cooking speed and capacity of any modern gas stove; the more powerful large model, which produces about 2.5 kilowatts of heat, can bring 20 liters of water to a boil within an hour. This makes it ideal for large-scale catering, for example, in schools.

A Society of Barefoot Solar Cooker Women Engineers has been established, with an office and workshop at Tilonia. It is the first registered association in

#### **Box 4. Empowered Barefoot Women around the World**

Fatuma Abubker Ibrahim, one of the Barefoot Solar Engineers of Ethiopia, lives in the remote village of Beyahile, in Afar state. Fatu is 20 years old, single, attended primary school, and lives with her parents. She and her family tend to their three cows, 30 goats, and three camels on two hectares of land. Since July 2006, Fatuma has also been looking after 90 fixed solar units, 90 solar lanterns, and one rural electronic workshop in Beyahile and nearby villages.

Awatif Abduraheman lives in the remote village of Benishangul in Ethiopia. Semiliterate, she is 25, married, and has three sons. She and her family make their living farming their four hectares. Awatif also does domestic work, and since July 2006 has been installing, maintaining, and repairing 80 solar units in her village and others nearby.

Aminata Woulet is 40 and lives in Tinjambane village in Timbuktu in Mali. A widow since 1994, she has never been to school, but can read and write. She has other skills: dyeing cloth with indigo, making leather crafts, and looking after goats.

Haja Woulet is 32, a widow with one 10-year-old daughter. She is illiterate and lives with her parents, also in Tinjambane.

Together Aminata and Haja solar electrified their own village of 92 houses in 10 days; it was the first village in Mali where rural women installed solar electricity.

Aji Kamera lives in the village of Kafenkeng in The Gambia. She is over 30, married with four children, and a Muslim. She attended school up to class 7 but then dropped out. She owns a small plot, on which she keeps three goats, a cow and four chickens. She installed solar electric units in 40 houses in one week; they have been functioning for nearly a year now.

Nancy Kanu, a Muslim, lives in KontaLine in Sierra Leone. She is 40 years old, has six children, and is semi-literate. She owns one sheep and one goat. Single-handedly, she solar electrified her village of 35 houses and was the first women solar engineer in Sierra Leone.

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Rajasthan of semi-literate and literate women. The society currently has six members who have completed training in fabricating and producing the parabolic solar cookers in two sizes, 2.5 and 8 square meters. These solar cookers have been installed in nine villages and are meeting the eating needs of more than 400 people daily. Small models can be found in several villages in Kadampura, Tikawda, Singla, Jawaja, Solavta, Kallian, Nalu, and Tilonia; the larger ones have been installed at Tilonia and Kishangarh, all in Rajasthan.

The women engineers regularly visit sites where solar cookers are installed in order to repair and maintain them. They are training others, including some young men, as barefoot engineers; they have even suggested some ways to improve the cookers by altering in the design. People who purchase a cooker receive one free



day of training in its use, installation and basic maintenance at the workshop in Tilonia.

Women like Sita Devi, who learned to read and write in Hindi at Barefoot College and who now coordinates the solar cooker workshop, are serving as examples that can change the role and status of women in rural villages in India and more widely in the developing world. Sita built her solar cooker expertise on her previous successful involvement in training people to repair hand pumps at Tilonia some thirteen years ago. In fact, she is currently the only person who can do that work in any of the six villages spread out across 500 square kilometers of Tilonia. Sita lives in Tyod village, and currently repairs and maintains 100 hand pumps in six villages, as a service for the government. At the time, government engineers were surprised when a woman wanted to do the job, but, with support

from Barefoot College, she prevailed.

She tells us that before a hand pump was installed in her village, she and all the other women would have to walk two miles, with two pots on their heads, to get water. Now, with a hand pump nearby, sometimes even the men will get the water—but only in a bucket, as pots are considered too feminine. Also, the water pulled up through the new hand pumps is safer than that in the open wells, which could spread disease.

That same kind of empowerment has now spread to women beyond India into other parts of Asia and Africa. For the past 11 years, the Barefoot College has been training semi-literate and illiterate rural women to assemble, install, repair, and maintain solar photovoltaic systems. Once selected by their village to undergo solar training for six months at the Barefoot College, the women come to Tilonia and acquire the competence and confidence to fabricate, install, repair, and maintain sophisticated solar units. They then return to their communities to install solar systems in each house in the village, thus establishing their credibility in the eyes of each family that pays a monthly contribution for them to repair and maintain the units (See Box 4).

Never in the history of Afghanistan has an illiterate woman left her house, her village, and her country for six months to train as a solar engineer in India, but that is exactly what 26-year-old Gul Zaman, from the village of Katasang in Daikundi province, did in 2005. She and her 30-year-old husband Mohammed Jan came to Tilonia for six months. They have a small plot of land to feed 10 people, and work as day laborers for over 200 days each year. Together the couple gently created history by solar electrifying their own village of some 50 houses, and the units have continued functioning since September 2005.

Electrifying houses provides additional income and a new level of confidence and leadership to the women who train in Tilonia as solar engineers and then serve as role models for young women in their villages. It also opens up other income-generating opportunities for all women, who can then use their evening hours to manufacture handicrafts and other goods for sale.

Only in the late 1980s did Barefoot College begin to recognize the potential of illiterate and semi-literate women to succeed in these non-traditional areas. As we have implemented this approach over the last 25 years, the women we have worked with have shown an awesome capacity and confidence to provide a service to their communities and to destroy stereotyped images and roles in the process. Today many women in non-traditional roles are serving their own communities. “Barefoot” women are working as night school teachers, hand-pump mechanics, solar engineers, water engineers, architects, masons, and fabricators of solar cookers. Illiteracy has never been considered a barrier to women developing themselves as barefoot professionals.

Illiterate women are handling computers and training unemployed youth in feeding technical, health, and literacy data to our organization. Since 1984, semi-literate and literate rural women have formed rural women’s groups in 68 villages; the total membership is about 4,000 women. They meet every month to take up

gender-specific issues such as rape and atrocities towards women at the village level; they also discuss health, education, and non-payment of minimum wages.

These rural women discuss these gender-specific issues at the village level. If they cannot solve them there, they take them up again at the block and district level. When they need to elicit collective strength and solidarity to tackle such issues, they take them to the state and national level. They have also elicited the support of the men in their villages on issues like the minimum wage, the public distribution system, the right to information, and the National Rural Employment Guarantee Act. Since 1972, when Barefoot College started working with the poorest of the poor, rural women have been actively involved in rallies, demonstrations, and sit-ins to fight for gender-specific issues as well as larger issues of development.

### **Traditional Communication**

In 1981, the Barefoot College launched its communication section, using puppets to spread awareness and mobilize action on several key problems that emerged as concerns during community discussions. Traditional communicators such as puppeteers and street theater performers have proved to be very powerful in communicating social messages, particularly when an audience is not highly literate. Barefoot College uses live and interactive media more familiar to the poor than television or newspapers.

While puppetry is a tradition in Rajasthan, the Barefoot College pioneered its use for this specific purpose. Its puppet team has influenced and changed the attitudes of many traditional and conservative communities on issues such as child marriage, bride burning, the legal rights of women, equal wages for women, and reasons why children should learn how to read and write. Barefoot communicators perform shows at night in the villages. The glove puppets, made from recycled paper such as World Bank reports, are used to act out stories that bring up a range of issues: children's education, being untouchable, women's empowerment, the right to information, exploitation of the poor, and the importance of the minimum wage. Adults and children alike attend the shows, which are largely improvised. Barefoot Communicators do not use written scripts, as many are illiterate or semi-literate. Each year, Barefoot Communicators perform 100 to 150 puppet shows, reaching nearly 100,000 people in 110 villages of Rajasthan.

In 1985, our communication team went to Chota Narena in Rajasthan to stage a puppet show. That particular day we performed "Roti" (Bread), a play about a man whose habit of drinking liquor completely destroyed his wife and children. As soon as the show was over, one man got up, looked at the audience, and shouted, "Did you listen carefully to the play? That happened to me. You all know how liquor totally destroyed me and my family." We were stunned. Before we could blink the man came on stage and said with great humility, "You have opened my eyes. Where were you all this time? I have a request to make. From now on, whenever you perform this play, please tell people that this is the real story of a man in



*Solar electrified village at night.*

the village of Chota Narena.”

The work of the Barefoot communicators has also been showcased outside of India. In December 2005, a team of Barefoot Communicators went to The Eden Project in Cornwall, England for two months. They performed puppet shows, taught their English counterparts to make glove puppets from recycled paper, and learned how to make puppets larger than the 3- to 4-meter ones found in the villages of Rajasthan. Today, these larger puppets can be found in festivals and parades in Tilonia and neighboring villages.

#### GLOBAL REPLICATION OF THE BAREFOOT APPROACH

The Barefoot approach is a breakthrough: we have demonstrated that it can be replicated anywhere in the world. Ten years ago, three sheep farmers from the village of Agrisewal near Marrakech in Morocco were selected to come to the Barefoot College in Tilonia. They had never been outside their village. They only knew Berber and French—no English and no Indian language. In six months, using only sign language, they became barefoot solar engineers, installed 100 solar units in the Himalayas in India, and then went back home. This demonstrated that language, religion, food habits, climate, caste and creed are not barriers to learning.

At this time, more than 340 ordinary village men and women from eight countries in Asia, Africa, and South America have been trained as BSEs. They have solar-

electrified some 550 schools and 13,000 households in more than 600 villages across the globe. They have assembled and installed over 10,000 solar home lighting systems and 4,400 solar lanterns, for a total installed capacity of 646 kilowatts. Those in Ethiopia constructed six rooftop rainwater harvesting structures last year, with a total capacity of 600,000 liters. In Africa the rooftop rainwater harvesting tanks have benefited some 2,100 children in Sierra Leone, Senegal, and Ethiopia. Based on these successes, the Barefoot College is scaling up its efforts to train rural African women in solar electrification so they can bring light and income to villages in Mali, Sierra Leone, Cameroon and the Gambia.

The Barefoot College has trained 97 rural women across the globe as BSEs, including 11 women from Mali, Sierra Leone, and Cameroon in 2007. These women have shown that language, climate, culture, and schooling are no barriers to the practical mastery of solar systems. As the college ramps up its solar electrification projects across Africa, these women are leading by example: showing how the skills of the rural poor, de-linked from literacy, can drive their own development.

The Barefoot approach remains distinct, but is gradually becoming a part of the official “system.” The college is now moving into using non-traditional communications channels, including the Internet. To get out the message about its success it is producing videos and photography, and participating in international networks and meetings. Its initiative included training both men and women as barefoot doctors, hand pump mechanics.

- Between 1984 and 2005, the College received \$ 7.6 million to install 13,300 fixed solar units. This included the installation of 800 fixed units in Ladakh in Kashmir, supported financially by \$450,000 from the Ministry of Non-Conventional Energy.
- Between 1996 and 2003, the Ministry of Non-Conventional Energy provided \$775,556 to install 4,000 solar units and 7 power plants of 2.5 kws each in the backward, tribal hill states all over India.
- In 2000, the European Union provided \$500,000 to install 1,250 fixed solar units and 5 solar power plants in 3 states: Uttranchal, Jammu, and Kashmir, and Sikkim.
- In 2003, UNDP India provided \$1 million to install 1,400 fixed solar units, fabricate 2,000 solar lanterns, and establish 7 Rural Electronic Workshops in 100 villages in 7 states of India.
- In 2005, UNDP Ethiopia provided \$1.4 million to install solar electric units in 600 houses in 30 villages.

## CHALLENGES AND LESSONS LEARNED

What is pioneering and innovative about the Barefoot approach is the emphasis and respect it gives to applying the knowledge, skills, and practical wisdom of the rural poor—which may be the only way to make communities self-reliant and sus-



tainable.

With roots in the village community and a deep-rooted respect for the proper and wise use of water, air, earth, and the sun, Barefoot Educators have set an example of how NOT to waste or overexploit nature resources. They are a living testimony to Mahatma Gandhi's famous saying, "The world has enough for every man's need but not for one man's greed." The approach has had a considerable impact in changing the mindset of urban "experts" and influencing their attitudes toward the idea of having the poor identify and solve their own problems. Development with dignity means development with less dependence on urban skills and more self-respect. The Barefoot approach has worked. The results are there for everyone to see and feel.

In driving its innovations, the Barefoot College has come up against several major challenges.

### **Promoting a Different Vision of Development**

The first challenge has been to convince people that a different vision of development is possible. Throughout its brief lifetime, the college has worked hard to convince urban people that semi-literate men and women from any village in India—indeed, any remote village in the world—can competently provide professional services to their own communities. While the results of the college's work speak for themselves, this task continues to be a daunting one since it involves changing long-held stereotypes, mindsets, and attitudes towards the poor. Still, a great many people, including many who hold important positions, have learned about its activities and have traveled to Tilonia to witness its work first-hand. We make progress with each new person who comes to the campus, as they absorb the spirit of the approach and are inspired to help disseminate and expand it within their own spheres of influence.

### **Dealing with Success**

The second challenge has been dealing with success. The college has demonstrated that semi-literate rural women can solar-electrify remote villages and look after solar units more competently than paper-qualified solar engineers. In so doing, it has turned established perceptions upside down, and debunked the basic assumption that formal education is required for development work. Unfortunately, in challenging established thinking on development, the college has generated hostility and jealousy, and has made many enemies.

Those most hostile to the Barefoot approach are people who have invested a great deal in acquiring an education through the official system and then applying that misguided "expertise." The very idea of semi-literate women being able to manage and control initiatives at the village level undermines those hard-earned credentials and credibility and even threatens the existence of their jobs. Indeed, one result of the Barefoot approach in India, where it is most widely replicated, has been the replacement of cost-intensive initiatives and jobs by low-cost and labor-

intensive initiatives, providing gainful employment within the villages.

### **Learning from Failure**

The third major challenge has been to learn from successful failures. Taking risks, trying new ideas, failing and trying again is a process that is respected in the Barefoot College because we recognize that we should learn as much from failure as from success. But the formal education system has no room for failure. In that system, failure is considered a matter for shame and regret. Barefoot College gives everyone involved the opportunity to make mistakes and learn from them.

Any organization worth its salt has to go through crises. The crises can either break the organization into little splinters or eventually make it stronger. In the early 1980s, as decision-making power within the college gradually shifted from the urban professionals to the rural youth, many of the former left to join other organizations or opted back into the system. That was a crisis that led to uncertainty and insecurity. But the college learned two important lessons that have since guided and influenced future decisions.

**1. Do not depend on urban professionals because they will not stay there all their lives.** In a world dominated by materialism, they may be tempted to use the college as a stepping-stone to secure better-paying jobs. The answer has been to develop the capacity, confidence, and competence of the rural poor to provide their own services. After all, they have the knowledge and the skills that have stood the test of generations before the urban-trained doctor, teacher, and engineer turned up on the scene. Why not, as a policy, move in that direction? That is what we have done and it has been a key to our success.

**2. You do your best work when you are insecure.** When your back is against a wall and you have nowhere to run and no one to turn to, you have no choice but to face the consequences. When a crisis arises and could possibly lead to violence, urban professionals normally do not have the staying power. Because they have somewhere to run to, they are not prepared to see the crisis through.

In many ways, the Barefoot College is a microcosm of a more just and creative world. Special emphasis is placed on giving the physically and mentally impaired the same opportunities to work and belong to society as the physically and mentally able. People who need medication but cannot afford to pay the market price are charged 10 percent of that price by the health center; if they are really struggling, they are given the medication free of charge. Waste paper from offices is recycled to make bags, pencil holders, origami, and teaching tools—which are in turn supplied to local night schools. Office equipment, fans, and lights are powered by solar panels on the roofs of office buildings; living quarters are similarly supplied with solar energy. Drinking water and sanitation needs are met by a combination of rooftop rainwater harvesting and local hand pumps; and the local environment is strengthened by a network of troughs that harvest rainwater and feed it into a large open well used to recharge the water table. Discarded intravenous drip bottles and tubes are disinfected and used to irrigate plants on the campus in

this semi-desert area.

The Barefoot College has been putting into practice an idea first espoused by Mahatma Gandhi: that the resources required to develop poor communities lie within the bounds of those communities. Human, technical, and financial resources need not come from outside in order for a community to bring about fundamental change and improve its quality of life. Too often, community resources are neglected, looked down upon, and considered inferior just because they have not conformed to the formal requirements of the education system.

However, just as important, the college has demonstrated to the villagers themselves that any one of them, man or woman, with little or no educational qualifications, can learn to provide basic services to their own community. To be able to change the mindset of poor rural people who have been made to feel that they cannot do it themselves is an enormous contribution. Less developed countries would benefit immensely from adopting this Barefoot approach. It can eventually transform the outlook not only of development officials, but, most importantly, of the rural poor themselves, instilling in them a “can do” attitude to improving their own lives, and replacing the apathy and hopelessness they may feel after so many years of coming up against an irresponsive system that does not respect their abilities.

First they ignore you, then they laugh at you, then they fight you, and then you win.

—Mahatma Gandhi

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1. Julius Nyerere was President of Tanzania from 1964 to 1985. The full quote is as follows:

Development brings freedom, provided it is development of people. But people cannot be developed; they can only develop themselves.

For while it is possible for an outsider to build a person's house, an outsider cannot give the person pride and self-confidence in themselves as human beings. Those things people have to create in themselves by their own actions.

They develop themselves by what they do; they develop themselves by making their own decisions, by increasing their own knowledge and ability and by their own full participation as equals in the life of the community they live in. People develop themselves by joining in free discussion of a new venture and participating in the subsequent decision; they are not being developed if they are herded like animals into the new ventures.

Development of people can, in fact, only be effected by the people.

Nyerere, Julius. *Freedom and Development. Uhuru na Maendeleo. A Selection from Writings and Speeches 1968–1973*. Dar es Salaam; London; New York: Oxford University press, 1974; p. 58.