



# Blum Center for Developing Economies

Winter 2012



Students held a poster session showcasing development technologies, anti-poverty initiatives, Big Ideas projects, and Global Poverty and Practice fieldwork.



**USAID**  
FROM THE AMERICAN PEOPLE

**Photos from USAID Administrator Rajiv Shah's visit  
to the Blum Center on October 10th, 2012.**

## Across Institutions, Across Borders: Networks in Poverty Alleviation

By Javier Kordi

On October 10th, the Blum Center received national attention: Rajiv Shah, the administrator of the U.S. Agency for International Development (USAID) ventured across the country to meet with the UC Berkeley community. The Blum Center was honored to host Director Shah, as he spent the day engaging with students, meeting faculty and board members, and learning about the latest initiatives in poverty alleviation.

Dr. Shah's visit marked the first in what will be a continued, symbiotic partnership between the federal agency and the Blum Center. Towards the end of his visit, he delivered a keynote address

to an overflowing audience of students, professors, and community members. Dr. Shah praised the center's focus on "deep analysis and broad engagement... that not only generates new ideas, but also tests and applies real-world solutions." He noted the uniqueness of the Blum Center's approach, which combines top-down efforts with empowerment and sustainability from the ground-up.

In his speech, Dr. Shah noted his interest in solutions such as the WE CARE Solar Suitcase and the Cell Scope. With their respective abilities to curb infant mortality and facilitate early disease diagnosis in rural areas, these initiatives are a sampling of the promise

of university-level development to help the poor. Dr. Shah explained that the process of interdisciplinary collaboration that birthed these projects now serves as "the model for a network of development laboratories [USAID] is forming across the country."



Photo Credit: Blum Center

The next era in poverty alleviation will be defined by an open-source approach to development that breaks down barriers limiting the availability of the latest innovations. The open-source paradigm holds the key to implementing sustainable and replicable real-world solutions. An example Dr. Shah mentioned was a mobile phone equipped with geographic information system capabilities. Made readily available to the hands of vulnerable populations, this device would allow atrocity victims to record critical information (such as time, place, and photographs) to be used as substantive evidence in international courts.

USAID understands that even the most brilliant technologies are mere tools—without a solid implementation platform, their impacts are limited. For its projects to succeed, an organization must have a fluid ideology that can operate within the varying landscapes and climates of development. This requires

a lively discourse on the methods and approaches to development. On university campuses, the conversation is ever-growing, and USAID wants to join in. According to Dr. Shah, USAID aims to spark a dialogue with the millennial generation of activists and scholars emerging from places like UC Berkeley. In pursuit of this goal,

USAID has created an online-space called USAID Fall Semester which seeks to invite students to converse, critique, and collaborate with the organization.

Dr. Shah ended his speech with an inspirational call to action—stating that extreme poverty could be reduced by 90% if efforts were accelerated. He then opened the floor to questions, and a lively conversation ensued. It was a day to be remembered for the students and faculty at UC Berkeley. As the Blum Center's model is replicated and leveraged, with new partnerships across people, institutions, and ideas—a new chapter in the fight against poverty begins.

## Growing the Student Innovation Ecosystem: "Big Ideas in a Box"

By Luis Flores

More than 450 undergraduate and graduate students submitted proposals to one of the Big Ideas@Berkeley's nine contest categories – representing the largest contest to date. With \$300,000 in expected awards, winning proposals will receive the critical support and funding that could spread their idea and address social and global challenges. To the benefit of big ideas everywhere, the opportunity to cultivate innovative plans into real-world projects could soon become available to university students around the country.

This year, UC Berkeley students interested in the Big Ideas@Berkeley contest were presented with two new global challenges: (1) develop a proposal that will preserve or promote the protection of individual's essential rights and (2) design an innovative solution that will safeguard the health of expectant mothers and young children. Kicking off a dynamic partnership, Big Ideas@Berkeley and U.S. Agency for International Development (USAID) collaborated to open two new contest categories. The new "Maternal & Children Health" and "Promoting Human Rights" contest categories were inspired by USAID's "Savings Lives at Birth" and "Tech Challenge for Atrocity Prevention" challenges. USAID's initiatives foster a similar level of creativity by allowing groups of all sizes and from all backgrounds to contribute to addressing these pressing issues. Big Ideas has taken problems important to USAID and challenged UC Berkeley students to address them.

In addition to expanding the number of categories in the contest, the Big Ideas team is working to expand the contest to

other universities. We're currently working to develop "Big Ideas in a Box," explained Jessica Ernandes, a graduate student assistant for the Big Ideas contest. "Our goal is to share the framework and process with other universities so they have the tools that have proven useful for us."

While still at an early stage of development, this collection of documents will detail everything needed to manage a university-based innovation competition. The idea to replicate this contest was prompted by the recently announced Higher Education Solutions Network (HESN). In partnership with USAID, UC Berkeley is working with six other universities to share and develop technologies and practices needed to collaboratively address global problems. A key piece of this effort is focused on challenging and preparing the next generation of innovators and entrepreneurs.

ideas during the 8-month long contest. This key feature should be central to any Big Ideas contest replica. "To foster student innovation, you have to know where students need support and what they'd like to get out of a program like Big Ideas," explained Ernandes. "Listening to them is a necessary first step to ensure that the Big Ideas competition continues to be relevant and impactful as it moves to other campuses."

The growing focus on university students is encouraging to Alexa Koenig, interim executive director of UC Berkeley's Human Rights Center. A judge for the "Promoting Human Rights" contest category, Koenig believes young people are the best problem solvers. "Students are constantly being exposed to new ideas, whether from their professors, events on and off campus, or their peers, which can contribute significantly to creativity," she explained.

"Big Ideas in a Box" is only one of many collaborative projects that will come out of the HESN, but it is a significant one. The Big Ideas competition will provide a pipeline of essential interdisciplinary and intergenerational perspectives on how to develop solutions to address social challenges.

It may not be long until students can apply to Big Ideas at universities throughout the country and the world. "In many ways, I think our model can be replicated because it is, at its heart, really simple," explained Ernandes, "we support and allow students to do what they are great at—being passionate, smart, and creative."



Photo Credit: Blum Center

That's where Big Ideas@Berkeley comes in. The contest succeeds because it does not simply grant prize money. The contest application process itself is an ecosystem for nurturing social innovation. From the pre-proposal phase, Big Ideas provides guidance, mentorship, and support to applicants, allowing students to grow their

## D-Lab: Designing Sustainable Low-Cost Energy Technologies for the Poor

By Christina Gossman

Giving a man a fish is good. Teaching a man how to fish is better. Yet, fishing is useless without a river. According to Dr. Kurt Kornbluth, the history of development is filled with examples of good intentions with sufficient capital but insufficient preparatory research and little follow-up to devise the most sustainable solutions. To counter such well intentioned but uninformed development work, Kornbluth founded the D-Lab at the University of California, Davis, with support from the Blum Center for Developing Economies.

D-Lab stands for Development through Dialogue, Design and Dissemination and

aims to improve living standards of low-income households by creating and implementing appropriate, sustainable low-cost technologies. Inventor and educator Amy Smith launched the first D-Lab at the Massachusetts Institute of Technology (MIT). During the developmental stages of the initiative in 2005 Kornbluth, then a , a PhD

student in Mechanical Engineering at UC Davis, assisted her Smith during the developmental stages of the initiative in 2005. Since then, MIT's program has successfully grown to offer sixteen different courses, exploring development, design and social entrepreneurship.

Following the success of MIT's D-Lab, Kornbluth wanted to bring the program to UC Davis; after finishing completed his graduate work and then embarked upon a mission to establish his own D-Lab at UC Davis.

Focusing on issues such as off-grid power, post harvest crop preservation, irrigation, and renewable energy, the D-Lab at UC Davis offers two hands-on

courses for graduate and undergraduate students at the intersection of energy and international development. The first course gives an overview of development work around energy, while the second provides students with a platform to design for the energy market. As part of the class, D-Lab students are directly coupled with clients who face a specific

problem. They spend ten to twenty weeks working with these clients in different parts of the world—from Zambia and Nigeria to Bangladesh, India and Nicaragua—to offer concrete solutions.

"Students at the D-Lab always work with real problems and real people," Kornbluth explained in an interview. The students' designs don't remain in academia but directly impact people in the field. Clients get answers—students gain real-life experience.

Throughout the process—brainstorming and narrowing ideas and transforming feasible solutions into real pilot projects—sustainability is the number one priority. All projects must take into account what Kornbluth calls the "four lenses of sustainability:" environmental, economic, social, and technical. In two project-review sessions per quarter, practitioners, academics and peers provide students constructive, often hard-edged feedback. Most D-Lab students are graduate students from different fields and disciplines, including engineering, economics, international development. This diversity allows

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students to learn from each other as much as from the process of designing a sustainable energy solution.

While it is crucial to carve out a concrete and substantial project within the time period of the course, some of the more successful solutions have stayed with students beyond their D-Lab experience. One D-Lab graduate used the “SMART light” prototype he had developed in D-Lab as part of his portfolio when applying to a job after graduation. Another student recently received \$40,000 from “Start up Chile,” a government-sponsored program designed to draw start-up technology companies to the country, to further his efforts in bringing safe water to Chile.

Despite the successes, Kornbluth humbly admits that, as in any field, not all projects work out great. “In D-lab Maybe 25% are a total flop, 25% will be mediocre and about 50% are really good,” Kornbluth said.

But those innovators who are successful create real impact—especially when they get together. The UC Davis D-Lab is part of the International Development Design Summit (IDDS) network. Once

a year, 60 to 80 practitioners from around the world assemble for a different kind of academic conference. Under the banner of co-creation, students, teachers, professors, economists, engineers, mechanics, doctors, farmers and community organizers present technology and enterprise prototypes instead of academic papers. Meeting in Kumasi, Ghana, and Sao Paulo, Brazil, in

2012, IDDS leaders intend to launch additional locally organized summits in 2013. The goal is to turn these meetings into regular, university-based innovation hubs to exchange technology ideas.

Feasible, applicable and replicable solutions reach far, but networks are also of great importance. Since the beginning, UC Davis and MIT have been collaborating in developing the D-Lab curriculum, and they are looking for other universities to adopt the D-Lab model. “D-Lab is really about new technologies, and working with them in context. But it’s also about curriculum

and it’s about networks,” Kornbluth explained.

In a university consortium with MIT, the D-Lab has just become part of a greater, brand-new network: the USAID Higher Education Solutions Network that was launched on November 9th 2012. In this 5-year partnership with seven top U.S. and foreign universities (among them, UC Berkeley), this initiative will

harness the best ideas to fight poverty through development laboratories similar to the D-Lab. If this new generation of development professionals learns how to research, design, test and scale up effective development technologies, there is reason to hope that there will be no more fishing without water in international development.

Curious about the Higher Education Solutions Network and the new partnership between USAID and UC Berkeley? Read “Big Ideas In a Box” by Luis Flores on page 3 for more information.

Clients get answers,  
students gain  
real-life experience.



Photo Credit: UC Davis D-Lab

## Gram Power

By Kate Lyons

Gram Power, a company incorporated in 2012 by campus graduates Yashraj Khaitan and Jacob Dickinson, is expanding its reach with help from the Blum Center and United States Agency for International Development (USAID). The company's mission is to provide affordable electricity to thousands of individuals who have restricted access to power in rural India.

Areas with little access to electricity rely on kerosene -- a dangerous and unhealthy power source. Gram Power offers communities "pay as you go" electricity. It is a system of micro-payments based on the successful model of prepaid cellular phones connections by Indian telecommunications companies. This "pay as you go" system is designed for low-income workers who earn a daily wage, providing them with access to green energy without a large up-front investment.

Yashraj Khaitan graduated with a degree in Electrical Engineering and Computer Science (EECS) from UC Berkeley in 2011. During his time as an undergraduate, Khaitan was involved with solar cell research at Lawrence National Labs and helped found the UC Berkeley chapter of Engineers without Borders.

Jacob Dickinson, also a graduate of the EECS department, is the head of Gram Power's technical development. As an undergraduate, Dickinson led the UC Berkeley's Solar Car Team's electrical division.

The two first met at a training session for UC Berkeley's Solar Car team in early 2010, where they discussed Khaitan's



Photo Credit: Gram Power

experience participating in grassroots projects with villagers in rural Rajasthan; a large desert state located West of New Delhi. It was from this experience that Khaitan's idea to develop a sustainable electricity project arose. Upon hearing the pitch, Dickinson's interests were enlivened, and he became immediately involved with the project, developing technology and seeking product validation.

"I first understood their needs, evaluated current solutions, decided on a price point that would be affordable and then started concept design," Khaitan said.

Gram Power's smart stackable battery, called an MPower, is a portable storage system made up of a battery and "smart power" conditioning circuitry. Small and lightweight, MPower fulfills Gram Power's two main objectives – creating a power source that is flexible (can be used for

powering more than lighting) and energy efficient. By reducing power consumption with efficient green technology, Gram Power enhances the individual's investment and contributes to a cleaner environment.

The MPowers can be charged from a conventional power grid, a micro grid, solar panels or a bicycle dynamo. A fully charged MPower can charge a cell phone and provide power for lamps and fans; a fully charged stacked battery can power a television or computer. Gram Power believes its energy solution will impact communities' light and communication capability, resulting in more education, work productivity and higher earning potential. The power is renewable and clean, providing environmental and health benefits, while Gram Power's business model encourages local economic growth by employing individuals from each community as Area Sales Managers.

"Our main concern was affordability and utility. We wanted to design something that provided high utility at the right price," Khaitan said.

Development and funding of the project began at UC Berkeley. After discussing his ideas with professor of Computer Science Dr. Eric Brewer in 2010, Khaitan began working with Dr. Brewer and the UC Berkeley research group TIER (Technology and Infrastructure for Emerging Regions). TIER designs and deploys new technology that helps address a particular region's environmental, political and/or economic

concerns with innovative hardware and software infrastructure.

In 2011, Khaitan and Dickinson decided to enter Gram Power into Big Ideas @ Berkeley, an annual, campus-wide prize competition that provides funding, support and encouragement to interdisciplinary teams with innovative ideas. Dr. Arthur H. Rosenfeld, former Professor Emeritus of Physics at UC Berkeley and Chairman of the California Energy Commission judged the competition, and selected Gram Power for First Place in the Energy Efficient Technologies category. Gram Power was provided seed funding from the Arthur H. Rosenfeld Fund for Global Sustainable Development and the UC Berkeley Blum Center for Developing Economies.

"Apart from providing significant financial support to deploy our systems in the field in India, Big Ideas helped us think through our business model thoroughly," Khaitan said. "The feedback and advice repeatedly made us aware that technology is not the most important thing – creating affordable and sustainable access is."

With the support and advice of the Blum Center and the Arthur H. Rosenfeld Fund, Gram Power emerged in Rajasthan, India. To continue growth, Gram Power entered and won the LAUNCH: Energy Challenge, an initiative founded by USAID and its partners in 2011. The LAUNCH program identifies groundbreaking

innovations in sustainable and accessible energy solutions and provides them with financial resources and project guidance.

"LAUNCH helped us launch!" Khaitan exclaimed. "It got us our first round of angel funding, helped us expand our network of advisors to leading figures in this sector from around the world..."

they worked very closely with us for 6 months after the event to help create access to the people and resources we needed to achieve our long and short term goals."

Gram Power is now focusing on smart microgrids-- localized electricity production centers that are smaller and



Photo Credit: Gram Power

more efficient. In May 2012, Gram Power launched India's first smart microgrid in Rajasthan with great success, and are currently planning with the local Rajasthan government and the Central Government of India to increase microgrid deployments. They are simultaneously working with the Blum Center, USAID, the Center for Effective Global Action (CEGA), and

TIER to rehabilitate 80 existing solar microgrids in Rajasthan. During the microgrid restoration, Gram Power and TIER will conduct extensive research evaluating different technologies and business models, in pursuit of a refined, sustainable method to provide reliable power to rural communities.

By the end of 2012, Gram Power plans to expand MPower units and microgrids to other states in India such as Uttar Pradesh, Haryana and Bihar.

Gram Power's current projects are successfully providing reliable and affordable electricity for thousands of people, and Khaitan hopes to reach millions in the future. "We're looking to continue deploying our smart grid system on existing microgrids," Khaitan said.

"Eventually tackling the existing national grid in India."

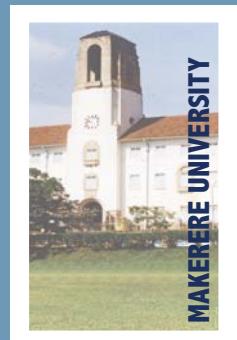
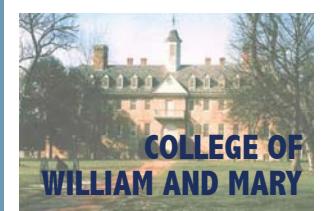
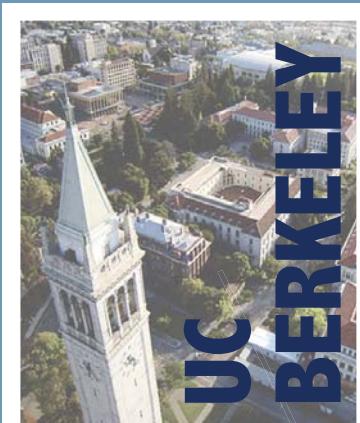


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# HIGHER EDUCATION SOLUTIONS NETWORK



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