Duke Engineers for International Development is an organization of Duke University undergraduates from all disciplines within engineering and from others in the arts and sciences who strive to use technical knowledge to produce realistic and impactful projects in communities around the world. Whilst helping these communities, our projects also develop students’ desires to help others around the globe, their technical skills, and their intercultural understanding of what it means to be part of a sustainable, global community.

“This is a hands-on experience that every engineering undergraduate should have.” - Kathryn ’13
From the Executive Board

Over the past ten years, Duke Engineers for International Development has blossomed into the organization that it is today. DEID continues to expand, constantly striving to aid more communities in more parts of the world in new and innovative ways. However, while expanding its reach, DEID has not and will not lose sight of its guiding principles. DEID designs and implements high quality, student led engineering solutions to address community-expressed needs.

That being said, DEID could not be where it is today without the work and assistance of a large number of people. As such, the executive board would like to thank all those without whom DEID and its operations would not be possible. First, the board would like to recognize all past board members and project leaders, whose work and commitment still guide us today. The board would also like to thank the faculty and staff of the Pratt School of Engineering, who have been indispensable in their extensive guidance in both the academic and administrative spheres. In particular, we would like to thank DEID’s faculty advisor Dr. David Schaad for his invaluable advice, assistance, and experience. Finally and perhaps most importantly, the board wishes to thank all of the donors who have contributed to our cause. Nothing DEID does would be possible without your generosity and support.

As DEID continues to grow in new and exciting ways, we are proud to have such a strong history and support system that afford us the opportunity to change more lives and make a difference in more communities each year.

Mission

We are an organization that supports high-impact engineering projects around the world by combining community-driven ideas with student design. DEID’s partnerships with under-served communities create cost-efficient and sustainable projects that improve the standard of living of numerous individuals by addressing their core needs. While working on projects that draw from a wide range of engineering disciplines, students gain both invaluable real-world experience and a greater sense of international responsibility.

“I enjoy being involved with DEID because it’s a practical experience in engineering design, project management, and collaboration with professional engineers and Duke faculty.” - Reema ’13

History

Duke Engineers for International Development was born out of a long and illustrious presence of engineers on Duke University’s campus who have worked tirelessly to use their knowledge and the resources of Duke University to make an impact on the world now through technical engineering projects. This spirit had been previously energetically exercised through an Engineers Without Borders Chapter (EWB) on campus. As the group grew in size, though, the student leaders took steps to form a larger independent organization that would be more flexible, responsive, and innovative. Thus, Duke Engineers for International Development (DEID) was born. Now in its tenth year of operation, DEID continues to extend its reach to more communities, while still ensuring that its projects are of the highest quality. DEID retains a rigorous design review process while offering great flexibility in project inception and completion and the chance for more involvement amongst our undergraduates.
RECENT PROJECTS

DEID consistently operates multiple projects in regions around the globe. Our four most recent projects have been in El Salvador, Uganda, Rwanda, and Brazil. For a full list of projects DEID has completed in its ten years of existence, refer to our website at: sites.duke.edu/deid/past-projects

EL SALVADOR

During the rainy season in El Salvador, which lasts for more than a quarter of the year, rural villages are often isolated from larger communities when constant downpours cause water levels in rivers to rise and flood local roads. These floods impede pedestrians and vehicles from crossing the rivers safely. The villages of San Jose Villanueva and San Juan Buenavista had this problem along the Ki Quis Quillo River, where heavy rains often left the roads uncrossable. To address this, in 2012 DEID engineers constructed a 60 foot steel pedestrian bridge to replace the existing bridge, doubling the span of the previous bridge, and adding four feet to its vertical height. With the new bridge in place, residents of the villages no longer have to make the three-hour trip to attend school or work during severe summer rainy season. This bridge was the fourth to be constructed in El Salvador by DEID teams.

In contrast with the troubles caused by downpours that are common in El Salvador during part of the year, other issues arise during the dry season. During this time, water levels drop severely, making it difficult for rural villagers to find access to water. Recently, DEID team members have returned to villages in San Jose Villanueva to work on various water projects to help alleviate these concerns. In 2013, the group implemented a water storage system in Palomar, which included a 16,000 liter water tank, a rain catchment system and wash stations. In 2014, another group constructed a 9,000 liter water tank, a plate settler system, and a piping system in La Estancia. The combination of these projects has helped several thousands of local villagers.

“The chance to see the plans you had on paper come to life and actually make a difference in someone’s life is such a clear illustration of the power of engineering to make an impact in the world. DEID gave me that chance.” - Connor ’16
UGANDA

In 2012, DEID partnered with the Rural Agency for Sustainable Development, an NGO, to design and build an overnight water storage tank with multiple taps in Nkokonjeru to capture the water constantly flowing and increase distribution. Every villager in Nkokonjeru lives within a twenty-minute walk of a water source, but women and young children spend hours each day waiting in line for access. This system now increases the local access to water at four-fold and allows children to focus on their education instead of worrying about being able to collect water for their families.

In 2014, our DEID team in Uganda spent eight weeks in the rural village of Kahiura working with another NGO, Bringing Hope to the Family (BHTF), to construct two 20’ by 90’ classroom blocks for the New Hope Vocational School at Kyongera. Each classroom block consists of three classrooms and a storage room or reception and office area.

Originally, BHTF identified a need for a girls’ dormitory at the Kyongera farm as they tried to relocate the school into their own space for multiple years. After arriving in Uganda with plans to build a girls’ dormitory, during the first visit to the site, we were told the school needed classrooms instead, since they had repurposed the existing classrooms as a girls’ dormitory. DEID’s mission supports community-driven ideas that will have truly beneficial impacts on the community, and so our flexibility in redesigning the building was a learning experience in itself.

By the end of the trip, the first building was completed with the exception of the roof and the second building was built up to its foundation. With DEID’s continued support, the remainder of the buildings will be finished by the team from BHTF. Upon completion New Hope will be able to accommodate its new female students and expand their enrollment. Additionally, New Hope and BHTF can continue achieving their mission of assisting the community and empowering students to help them learn to sustain themselves for the future.

“From serving on DEID’s executive board to traveling with the 2012 Bridges to Prosperity Bolivia team, I have witnessed not only the real-world impact that Duke engineers can have on the world, but also how our encounters while working abroad can enrich our understanding of other cultures and people. I believe that these experiences were only possible through my involvement with DEID, and I am grateful that such an amazing student-directed group exists at Duke.”

-Justin ’15
RWANDA

In 2014, the Rwanda team partnered with Bridges to Prosperity (B2P), a national non-profit organization dedicated to improving access to healthcare, markets, and education in rural communities. DEID worked together with B2P to construct a pedestrian footbridge, which marked the fifth bridge the two organizations have completed as partners (DEID previously completed two bridges in El Salvador in Summer 2011 and two bridges in Bolivia in Summers 2012 and 2013). The footbridge was located in the Rutenderi cell of the Gashenyi sector in the Gakenke district of Rwanda. There was already a bridge on site, but it was incredibly unstable and often washed away during the rainy season. In addition, the existing bridge had no railing, and people had on several occasions fallen into the river below. Several hundred people use this crossing every day, so a safe method of transportation was desperately needed.

DEID collaborated with several interns from the Integrated Polytechnic Regional Centre in Rwanda, who assisted the team in the construction of the project on site. Additionally, DEID coordinated efforts with a team from the Polytechnic University of Lausanne in Switzerland on the actual design. The bridge itself was constructed during an eight-week trip from May through July and was built alongside workers in the local community in Rwanda as well as an advisor from the Bridges to Prosperity staff.

BRAZIL

DEID Brazil completed their project in the rural community of Santo Amaro, located near João Pessoa, Brazil in the Summer of 2014. In this community, there is a shortage of water that forces residents to tap the city water pipes illegally. Working together with Casa Dos Sonhos, a local non-governmental civic association, and students and professors from the Universidade Federal da Paraíba (UFPB), the team constructed one 10,000-liter tank and one 3,000-liter tank, both of which collect and store rainwater from the roofs of nearby buildings. These tanks were connected to the houses to supply water to their bathrooms, and the water was directed to and from these homes using a piping system that was also built by the team. By providing the community center with a reliable water source, Casa dos Sonhos can continue offering their services, which include physical and mental therapy, a safe space for children of the community, and supplementary academic instruction for those in need.

“DEID provided me with practical experience that I believe every engineer should have. I was exposed to challenges of transitioning from plans to implementation that never would have crossed my mind. I now see the infrastructure around me completely differently, and am much more capable of gathering knowledge from my surroundings on an everyday basis.” -Wanyi ’16
DEID is excited to partner with Bridges to Prosperity again and return to Rwanda in 2015 to help assist another community in the construction of a suspended pedestrian footbridge. The goal of the project will not just be to successfully complete the bridge in the given time span, but also to construct the bridge in a sustainable manner. Our team will strive to engage the local community and inspire them, causing a ripple effect that will ultimately affect the community more than just the bridge alone. The team formed some amazing relationships with the community this past summer and we are working again with locals in Rwanda to plan for the most impactful bridge possible. Partnership with the local communities is critical in properly assessing where the needs of the community lie. Our first bridge in Rwanda was instrumental in uplifting the local community and with sufficient planning and engagement we anticipate that this bridge will do the same.

DEID will be returning to Kaihura, Uganda to continue our partnership with the local community organization Bringing Hope to the Family (BHTF). BHTF has expressed the need for replacement classrooms at Hope Academy Primary and Nursery School. We hope to meet the needs of the community by designing and building a classroom block with 7 classrooms and an office at Hope Academy. The current classroom blocks at Hope Academy have two major problems. The infestation of termites in the wooden walls undermines the structural integrity of the classrooms and creates an unsafe environment for learning. The thin wooden walls also fail to adequately insulate sound; distracting noise is easily heard in adjacent classrooms. The proposed replacement block will be a masonry structure and will eliminate structural safety concerns and provide better sound insulation. The new classroom blocks will also attract more people to send their kids to the school, which in turn will allow the school to offer competitive wages for their teachers and retain their qualified instructors.

“Traveling with DEID is one of those once-in-a-lifetime opportunities that no engineer at Duke should miss. For me, it was not only an engineering experience. The moment I saw the appreciation on the Ugandans’ faces, I was truly amazed by how big an impact my 2-month’s service in the developing world had made.” –Billy ’16
COSTA RICA

This will be DEID’s first year working on a project in Costa Rica. The region in which we will be working, called Gran de Oro, is the poorest district in Costa Rica and poses unique challenges since much of the reservation lands are accessible only by foot. We will be working with a local community organization, St. Bryce Missions, on the design and construction of wood-burning stoves for cooking to replace existing cooking methods that lack proper ventilation. This year’s trip will also serve as an assessment trip in order to survey and gather data for the construction of a bridge in 2016. A footbridge would replace a cable which is currently used by some members of the community to unsafely cross the Pacuare river, and would afford women, children, and seniors access to the surrounding communities. Our team will spend the year working to understand the needs and desires of this community, and working towards forming a preliminary design.

DUHAM

In recognition of the need existing in the local community, DEID will be restarting its domestic campaign with a project in Durham in 2015. The last local project ended in 2006, with the construction of a handicap-accessible playground. The team will be working with the Ellerbe Creek Watershed Association to implement litter traps in Ellerbe Creek. This project will be different from traditional DEID projects, not only in that it will be implemented domestically, but also in that it will be implemented during the spring semester. This project will also be open to volunteers from Duke who are not necessarily part of the organization, as DEID continues to support civic engagement among students on both a local and an international level.

HONDURAS

This year, DEID will also return to Honduras to work with the community of El Pital and the local organization Un Mundo on the long-term implementation of a water distribution and treatment system. El Pital is a rural community situated among the mountains in the north of the country, about half an hour from the city of La Ceiba. During this summer, the team will implement a greywater treatment system for the community and gather data for the eventual construction of a water distribution infrastructure that will supply El Pital and the nearby village of La Lucinda. Un Mundo has also assessed other potential projects based on community needs and will be working closely with DEID to make their proposed solutions a reality. The partnership forming this year promises to be one that will continue to grow and develop over future years as well.

“I learned more than just how to fundraise, design, and build a bridge in Bolivia—in 3 weeks, I went from feeling lost in a country in which I did not speak the language to holding a 20-minute conversation with our mason on the similarities and differences of our cultures—it was transformational.” – Eunice ’16
FIND OUT MORE

To learn more about Duke Engineers for International Development, and to see more pictures and more information, visit our website and “like” us on Facebook. See the links below.

YOUR SUPPORT

In order to continue producing high-impact projects around the globe, and especially in order to further expand our horizons as we search for new and more ambitious ways to help local communities, we need your help. We are extremely grateful for the generosity of our donors, as our operations would not be possible without their philanthropy. For more donation information and weekly updates on all of our projects, see our website or email us at the address below:

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