

curriculum. SCAs enable rural Zambians to save capital, as well as potentially take out loans for small businesses or immediate needs. The work of the MED group is helping to provide communities in the Kalomo district, a region ravaged by the AIDS epidemic, with a simple solution for saving and investing their finances.

### STAFF

The staff group continued to provide administrative support for the Collaboratory. The marketing team developed promotional strategies to boost the Collaboratory's visibility through campus-wide activities and published two newsletters. The information management (IM) team continued to develop the Member Achievement Portfolio (MAP), a software tool created to house Collaboratory member information and monitor progress. The finance team provided valuable fiscal data to help the organization better track its finances, and the logistics team sent out several site teams to their international project locations.

### TRANSPORTATION

The transportation group continued work on two projects: the Light Sport Aircraft (LSA) and the Solar Commuter Vehicle (SCV). The LSA, which will be utilized on the mission aviation field, is still in development. The team conducted extensive research on finding and installing a new engine. The purpose of the SCV project is to develop an electric motorcycle for commuter purposes. The team finished integrating the new motor onto the motorcycle, modified the battery pack design to make it modular, finished the battery voltage monitoring circuit, and began programming a new motor controller.

*"This experience has helped me to understand myself and God's world a little better. The Collaboratory is about relationships, and I've grown tremendously through the challenges of working with wonderful people across cultures and lifestyles in Grantham and abroad. The Collaboratory has provided so many eye-opening lessons for me in humility, perseverance, and the underpinnings of godly joy."*

*—Emily Howell '10, Entering Ph.D. program in Biomedical Engineering at Cornell University (Fall 2010)*

### WATER

The water group completed one project and took on two new projects. The Village Water Ozonization System (VWOS) project team designed, built, and tested a large-scale water purification system to verify results generated from previous small-scale systems. The Filtration Purification Alternatives Project (FPAP) team began working on a resource tool to help match communities in need of potable water with an appropriate water purification system. This work included researching alternative purification systems and creating a community survey to provide the necessary information for use in the tool. After four years of research and implementation, the Joshua Farm Project, a rainwater catchment system, celebrated its dedication in Harrisburg, Pa., this May. Finally, this summer, the water group sent a team to Nicaragua to explore new partnership opportunities with the Christian relief and development organization Forward Edge International (FEI).

### FUTURE OF THE COLLABORATORY

The 2010-2011 academic year will provide the Collaboratory with several new opportunities and challenges. Due to changes in the school structure at Messiah College, Mathematical Sciences and Engineering will be joined with the Natural Sciences in the new School of Science, Engineering, and Health (SEH), and the department of Business will become part of the new School of Business, Education and Social Sciences. The Collaboratory will be housed in the new School of SEH. While these changes do not directly affect the Collaboratory's projects, they do require some organizational planning. Currently, the Collaboratory is looking to maintain connections with Education and Business while also considering future expansion to include new departments from SEH.

Additionally, the director of the Collaboratory, Dr. David Vader, took a sabbatical to study organizational leadership and development, and to discern strategic priorities for the Collaboratory at this time. Vader worked with the leadership team to study and sharpen the value proposition that the organization offers to its various stakeholders, including students, educators, volunteers, organizational partners and investors whom the Collaboratory hopes to engage. With the executive committee, Vader reviewed the foundational statements of the Collaboratory and proposed revisions needed to guide the organization's merger into the new School of SEH.

### 2009–2010 COLLABORATORY LEADERS

David Vader, Ph.D., *Director*  
 Deborah Tepley, *Manager*  
 David Bedillion '10, *Assistant Student Director*  
 Jonathon Martin '12, *Assistant Student Director*  
 Sarah Griffin '10, *Student Staff Manager*

### STUDENT INVOLVEMENT

GROUP	NO. OF STUDENTS
Communications	12
Disability Resources	25
Education	21
Energy	19
Microeconomic Development	17
Staff	31
Transportation	15
Water	13
<b>Total Students Involved</b>	<b>153</b>

### COUNTRIES WHERE WE SERVE

Burkina Faso	Nicaragua	Zambia
Haiti	Mali	
Honduras	United States	

### PARTNER ORGANIZATIONS

Brethren in Christ Church—Zambia	Joni and Friends and Christian Institute on Disability (CID)
Forward Edge International (FEI)	Serving in Mission (SIM)
Grace Mission to Haiti	Symbionx Foundation
International Technical and Electric Construction (I-TEC)	World Vision

### MAJOR FUNDING PROVIDED BY:

Conrad Hilton Foundation	Merrill Lynch Foundation
Cumberland Valley Brethren in Christ Church (Pa.)	Mulberry Foundation
Dillsburg Brethren in Christ Church (Pa.)	U.S. Department of Energy (DOE)
Elizabethtown Church of the Brethren (Pa.)	World Forgotten Children's Foundation
Gannett Fleming	World Vision
Keystone Innovation Zones (KIZ) (Lancaster and Harrisburg, Pa.)	W. M. Keck Foundation

We would like to thank the many individual investors who are a major source of funding for the Collaboratory.

### CONTACT INFO

If you would like to be added to our mailing list or have questions or comments, please contact:

The Collaboratory, Messiah College, Box 3034, One College Avenue, Grantham, PA 17027-9989, Collaboratory@messiah.edu, 717-796-1800, ext.7226

For more information, please visit our Web site: [thecollaboratoryonline.org](http://thecollaboratoryonline.org)

 the Collaboratory  
for strategic partnerships  
and applied research

# ANNUAL REPORT

2009–2010

 MESSIAH COLLEGE



## THE COLLABORATORY

The Collaboratory is an organization of students, educators, and professionals affiliated with Messiah College. The mission of the organization is to foster justice, empower the poor, promote peace, and care for the earth by engaging in projects that utilize the academic and professional abilities of participants and encourage lifelong servant leadership and the courage to act on convictions.

The Collaboratory houses its projects in eight groups that sponsor and manage projects related by a common area of academic and professional expertise. These groups are communications technology, disability resources, education, energy, microeconomic development (MED), staff, transportation, and water.

## COMMUNICATIONS TECHNOLOGY

The Wireless Enabled Remote Co-presence (WERC) project team, in partnership with Symbionyx, has continued developing an assistive technology device as an aid for persons with Asperger's Syndrome. Additional research and testing has led to improvements in the communication system between the coach and client, such as the replacement of a radio frequency analog wireless link with a Wi-Fi access point, and the use of a headset-mounted camera with a wide-angle lens. These developments have contributed to an increased range for the client and a more satisfactory image for the coach. Culmination of the year's work came with an improved, fully functional prototype that is ready for testing in a working environment.

## DISABILITY RESOURCES

The Mali Water and Disabilities Study project team finalized their work on developing low-cost alternatives to improve access to latrines and wells for disabled individuals living in rural communities in southeastern Mali. In June, members of the project team, along with representatives from Joni and Friends, hosted a comprehensive workshop for World Vision staff in Mali, designed to foster sensitivity and a greater understanding of the theology of disability, and the challenges faced by persons with disabilities. The project team has drafted a grant proposal to continue their work in Mali.

The mobility project team implemented several design modifications in order to improve the performance of tricycles for persons with disabilities, and created a new uniform frame design system. This summer several members returned to Mahadaga, Burkina Faso to implement these changes and to solicit feedback on the performance of earlier models.

## EDUCATION

The education group initiated a new project: the Burkina Summer Enrichment Program (BSEP). In partnership with the Center for the Advancement of the Handicapped (CAH) and Serving in Mission (SIM) in the village of Mahadaga, Burkina Faso, the education group led a four-week summer literacy and numeracy enrichment program for children with mental and physical disabilities. Collaboratory members learned about special education in West Africa and developed culturally appropriate curriculum and technology, while Burkinabè youth hired as translators and assistants were mentored as leaders to promote a sustainable and locally owned educational program.

## ENERGY

The Solar Scholars project team was formed in the Collaboratory in 2006 to design and construct a working solar-power demonstration and training facility on the Messiah College campus. The team completed the project and wrote a detailed manual for the solar demonstration cart, which will be used to train Messiah's Oakes Museum personnel and other operators. A monitoring system was also installed in the solar pavilion for visitors to observe current energy production of the solar panels.

"After graduating, I committed to a position in full-time international ministry. My Collaboratory experience is invaluable, as site team trips prepared me for serving cross-culturally, and my work as student director has given me great insight into how missions organizations function."

—William Bellows '09, Currently serving with Christian Missionary Fellowship (CMF) International

The Grace Mission to Haiti project team wrapped up their work this year. In partnership with International Technical Electrical Construction (I-TEC), the team designed a 7kW solar array system for the Grace Center, a conference and training facility for the Grace Mission to Haiti located in Port-au-Prince, Haiti. This system will provide reliable power for the Center and will offset their energy costs.

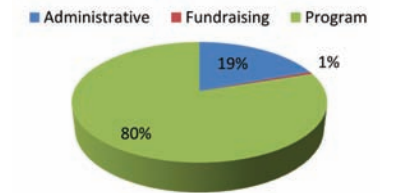
The energy group also launched a new project called the KWHR Meter project. This meter will be designed to measure, display, and limit kilowatt-hour usage of electricity in an AC sub-system or a home. The team has completed the design phase and is currently building the first generation prototype for testing in Mahadaga, Burkina Faso.

The biodiesel project team continued its work, funded by a research grant from the Department of Energy (DOE). During this time, the team completed the development, installation, and calibration of a biodiesel quality testing lab. The team also made significant progress in developing and building a prototype small scale methanol recovery system. This summer, biodiesel project advisor Mike Zummo traveled to Burkina Faso to explore possible project opportunities for the future.

## MICROECONOMIC DEVELOPMENT (MED)

The microeconomic development (MED) group, in partnership with the Brethren in Christ Church in Zambia, returned to Zambia this summer to review two Savings and Credit Associations (SCAs) that they had implemented in the summer of 2009, using the Village Savings and Loan (VSLA) program, and to start up new SCAs using a combination of the VSLA program and the Chalmers Center

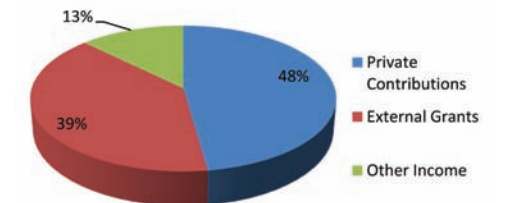
## Operating Expenditures



## Operating Expenditures

Administrative	42,444.57
Fundraising	1,205.00
Program	175,173.56
<b>Total Expenditures</b>	<b>218,823.14</b>

## Revenue Sources



## Revenue Sources

Private Contributions	73,287.80
External Grants	60,749.61
Other Income	1,772.45
<b>Total Income</b>	<b>135,759.86</b>

## Gifts-In-Kind

Donated Office Space	104,728.56
Donated Advisor Hours	473,155.00
<b>Total Gifts-In-Kind</b>	<b>577,883.56</b>

Gifts-In-Kind includes free professional consultation hours donated by Messiah College faculty and office space donated by Messiah College. Thus, although these figures show the dedication of Messiah College and its faculty and staff to the mission of The Collaboratory, they are not included in the pie charts.

