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- I am interested in volunteering on a weekly basis as a project manager.
- I am interested in being a reviewer for project effectiveness and management. *(1.5 hour, one-time commitment)*
- Contact me for other service opportunities. *(Please fill out your contact information below.)*

NEWSLETTER FEEDBACK

- My contact information has changed:

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Please mail this response card to:

Collaboratory
Messiah College
One College Avenue Suite 3034
Mechanicsburg, PA 17055

**Or email your responses to
collaboratory@messiah.edu**

WORD FROM THE DEAN

By Dr. Angela Hare



At 7:30 p.m. in Ouagadougou, Burkina Faso, on Friday, January 15, the toughest decision facing my Yaco Education Project site team was what kind of ice cream sundae to order for dessert.

After two weeks of working with Burkina Faso Outreach primary schools and living at the Sheltering Wings orphanage in the village of Yaco, the team was enjoying an evening out at a local Ouaga pizzeria with about 25 Serving In Missions (SIM) missionaries. As we deciphered ice cream flavors on the French menu, we learned by text message that there were possible terrorist attacks, gunshots and flames just a few blocks away at another restaurant. We left quickly, and over the next hour, our emotions shifted from relief (we were safe and in good hands with SIM) to concern, as we learned that the Sheltering Wings Director, Mike Riddering, had been at the café where the attack occurred and was unaccounted for. Saturday evening we learned the heartbreaking news that his body was found among the dead, one of 30 victims killed in the first Al-Qaeda attack ever to take place in the capital city.

But we are not of those who shrink back.

Mike had taken our team camping under the stars just three nights earlier and told us his story of listening to the Lord's call on his life in 2010. He went from a career as a boat-builder in Florida to digging wells, learning agriculture and being a father to 400 orphaned children at Sheltering Wings in a landlocked country. He told us he'd be buried someday in African soil. Two weeks later, more than 5,000 Burkinabe citizens, both Muslim and Christian alike, attended his funeral. The student team members Tori Dix '16, Jess Martin '16, Rebekah Curtis Shoemaker '16 and Emilie Smetak '16 think of Mike and his family often and remember his wife and children in their prayers.

It is natural, and in fact biblical, when such tragedies happen, to ask, cry and shout, "Why, Lord? Why would you allow a missionary, husband and father of four—the youngest a four-year-old adopted son who needs his papa—to be killed in a violent attack, when he was serving you among 'the least of these' in our world?" It is also natural to step back, take time to grieve and consider our own safety and options. To step back for a time is natural. But we are not of those who shrink back. Our Collaboratory partnerships, in Burkina Faso and throughout the world where we are privileged to be called, will persevere. Our Lord knows our grief and understands our questions and our fears. But though we mourn, we continue to step forth in faith, confident of his redemptive victory in a sinful world. 🟩



Emilie Smetak '16, Angela Hare, Bekah Curtis Shoemaker '16, Tori Dix '16, Jess Martin '16 (as pictured in the top right photo) experienced the local way of life, camped out under the stars and shopped at an artisan market.

THE COLLABORATORY FOR STRATEGIC PARTNERSHIPS AND APPLIED RESEARCH

MISSION

The Collaboratory is a center at Messiah College for applied research and project-based learning, in partnership with client nonprofit organizations, businesses, governments and communities in our region and around the world. Areas of engagement include science, engineering, health, information technology, business and education. Our two-fold mission is:

- To foster justice, empower the poor, promote peace and care for the earth through applications of our academic and professional disciplines
- To increase the academic and professional abilities of participants, their vocational vision for lifelong servant-leadership and their courage to act on convictions

VISION

Increasing hope and transforming lives through education, collaboration, innovation and service.

IDENTITY

The Collaboratory is an organization of students, educators and professionals affiliated with Messiah College. We are Christians who aspire to obey the instructions of our Lord and Savior Jesus Christ, to love neighbors as ourselves and to share his Gospel. As God enables us to serve others today, we seek to grow as disciples of our Lord and Savior Jesus Christ, to serve as God's stewards over the resources of our academic disciplines and to bear witness to the good news of the Kingdom of God.

OFFICE STAFF

- STUDENT DIRECTOR: Elizabeth Bashore
- ASSISTANT STUDENT DIRECTOR: Damaris Gehman
- STUDENT PROGRAM MANAGER: Rukshani Perera
- STUDENT ADMINISTRATIVE ASSISTANT: Sarah Bearisto
- MARKETING STUDENT PROJECT MANAGER: Rachel Peters

ADVISORS

- DIRECTOR OF THE COLLABORATORY: David Vader
- PROGRAM MANAGER OF THE COLLABORATORY: Rodney Green
- ADMINISTRATIVE ASSISTANT: Shannon Walker

STAY CONNECTED

- WEB: messiah.edu/collaboratory
- EMAIL: collaboratory@messiah.edu



COURTESY OF ANGELA HARE



THE COLLABORATORY FOR
STRATEGIC PARTNERSHIPS AND
APPLIED RESEARCH

One College Avenue Suite 3034
Mechanicsburg PA 17055

Address Service Requested

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STAY CONNECTED

SOCIAL MEDIA

For regular updates and inside stories, follow us on these social media sites! We would love to hear your Collaboratory story.

 facebook.com/Collaboratory

 [@mccollaboratory](https://twitter.com/mccollaboratory)

 [mccollaboratory](https://instagram.com/mccollaboratory)

 [The Collaboratory for Strategic Partnerships and Applied Research](https://www.linkedin.com/company/the-collaboratory-for-strategic-partnerships-and-applied-research)

SITE TEAM BLOGS

2016 teams:

- Panama
- Ghana
- Mexico
- Algeria
- Zambia

messiah.edu/collabtrips

ADDITIONAL ARTICLES

More stories and project updates will now be available online. Check out our home page over the summer to stay up to date with all of our activities.

messiah.edu/collaboratory

Our newsletter is printed on recycled paper, containing post consumer fiber. It is 100% Green-e certified, Green Seal™ certified and made Carbon Neutral Plus. Please recycle when finished reading.

“Approved Workers” – II Timothy 2:15

DOKIMO I ERGATAI

SPRING 2016

RAPTOR HAND



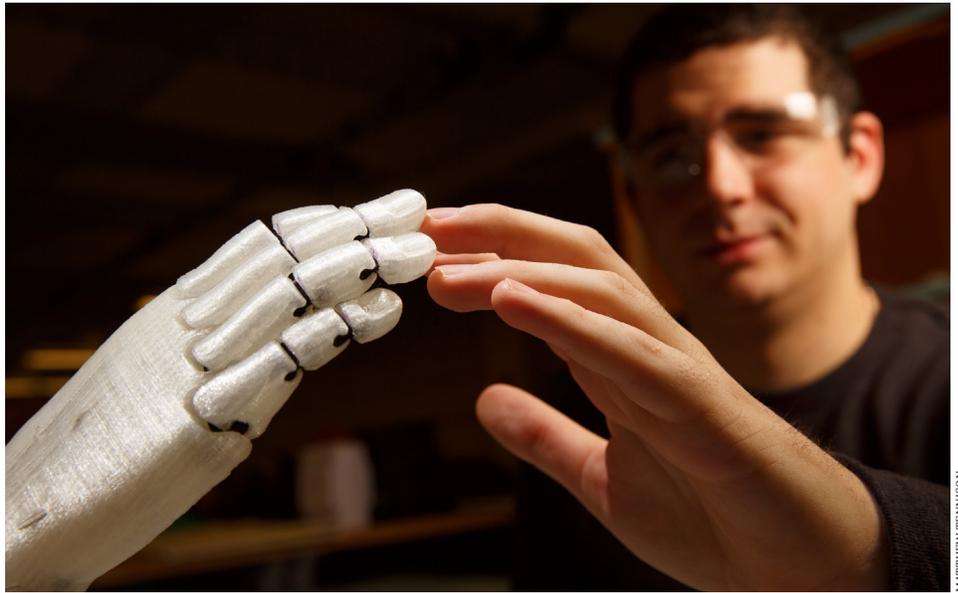
By Lydia Wan '18

Prosthetics have always seemed unaffordable

– approximately \$10,000 for a hand – until Collaboratory students began producing an affordable alternative in fall 2015. The students are motivated by the challenge to create a prosthetic hand that is not only affordable, but also durable, safe and appealing to their young client. Since children grow out of their prosthetics and need an upgrade every year, expensive prosthetics would be difficult to sustain for the middle class or those with low incomes. Although the 3D printer used to make parts for the prosthetic is expensive, the material used for printing is affordable. The result is a functioning hand with costs running less than \$50!

Although the final product costs less than a manufactured hand, the hand the team produced is superior in value. One of the things that makes the product better is its aesthetics. This is especially important, because their client is a little girl from Philadelphia. A mechanical hand would be unattractive and may also frighten her. After many modifications to the original design, the Raptor Hand team has a life-like design with ergonomic curves and realistic details such as fingernails. They even have plans to make a pink version to cater to their client's preferences. The student-driven prosthetic hand functions better than the original design. They credit the 3D printing technology for making this possible as the fine details would have been difficult with traditional manufacturing.

The students are motivated by the challenge to create a prosthetic hand that is not only affordable, but also durable, safe and appealing to their young client.



MATTHEW TENNISON

Collaboratory student Tim Gover '17 touches the 3D printed prosthetic hand.

The prosthetic has also undergone modifications to make it more comfortable. The original hand had five digits while the modified has only four, because their client has a thumb. With the original, her thumb would have been cramped inside the prosthetic. With the improved version, she can extend her thumb out of the prosthetic and use it for grabbing.

Even with these improvements, there is still a chance that the client may refuse the final prosthetic, because many individuals who need prosthetics are accustomed to living without a limb. They have spent considerable effort learning how to get through their daily routines. A prosthetic that is readily available, even with all its advantages, may be undesired because of the difficult and possibly painful or embarrassing relearning process that a person would have to undergo in order to incorporate it into one's accustomed habits.

The students will introduce the hand to her as a toy to familiarize her with it

until she is comfortable using it as intended. As a child's toy, there is a risk of the hand breaking. The students and Dr. Emily Farrar, project manager for Raptor Hand, have considered this and the possibility of choking hazards, too. Since it is inevitable that the hand will break, the students try

RAPTOR HAND, continued inside

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THE COLLABORATORY FOR
STRATEGIC PARTNERSHIPS AND
APPLIED RESEARCH



MOBILE MEDICAL CLINIC

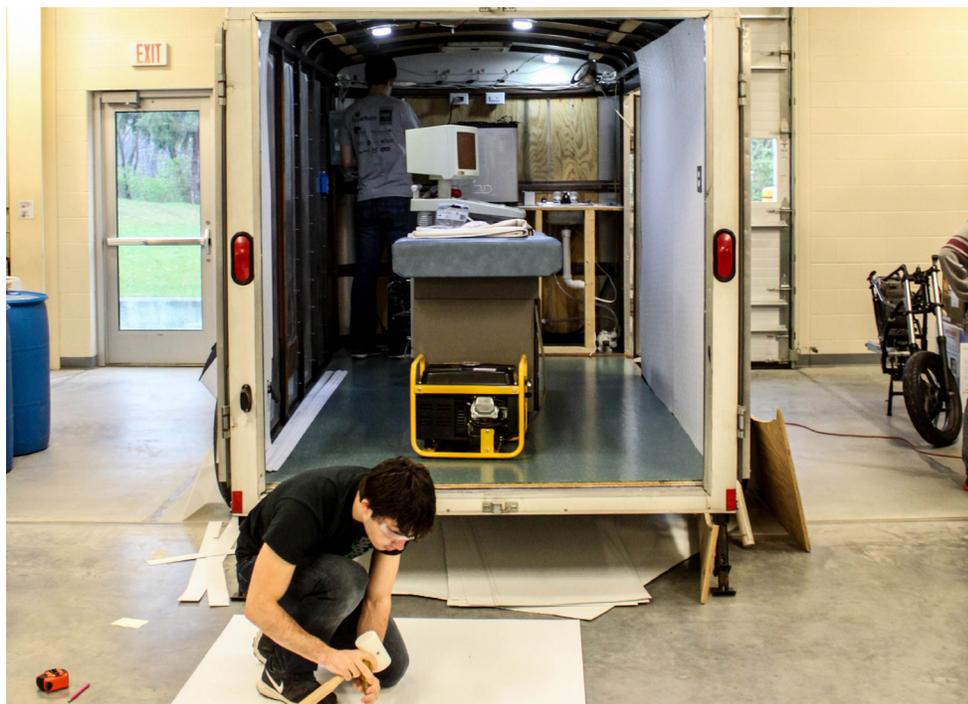
By Jake Haser '19

One of the Collaboratory's newest projects is the mobile medical clinic. This groundbreaking creation is going to improve lives in western Kenya. Student project manager Kari Senum '16 said, "It is being used specifically to treat cervical cancer in areas where people do not have the means or are not able to go to an actual doctor." The Collaboratory has produced the mobile medical clinic for Dala Development, a Christian healthcare organization. Based in Kisumu, Kenya, Dala Development focuses its healthcare initiatives solely in the nation of Kenya. The Dala organization will cover the cost of shipping the clinic overseas.

Multi-disciplinary collaboration has been a strong theme in the development of the mobile medical clinic. Senum stated, "We had a couple of nursing students help. We also had a professor of nursing who helped us know what we needed because she specializes in medical care for African countries. It was helpful to talk to someone who does this on a daily basis." Wanda Thuma-McDermond is the nursing professor who assisted the engineers on the development of the mobile medical clinic. The nursing and engineering students working together provided a unique synergy that advanced the project to where it is now.

The mobile medical clinic started in fall 2013, took a break until the spring of 2014 and will reach completion at the end of May 2016. Senum's favorite thing about working on the mobile medical clinic was seeing its progression from an empty trailer to a full clinic due to the group's efforts. The project has had many successes, but it has not been without its obstacles.

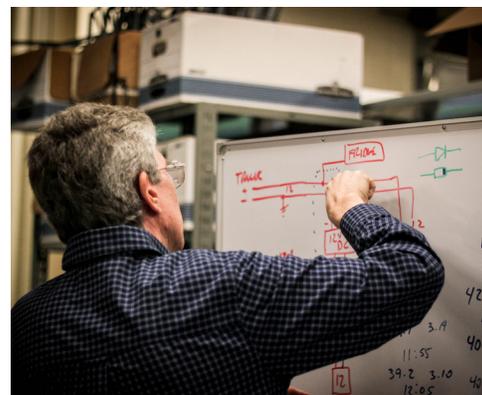
A success of the mobile medical clinic team has been their excellent work ethic. The team stepped up to get the project moving and has maximized the efficiency of their resources. Senum described, "Corners have not been cut, and we are doing the most with our budget and time." Setbacks have been with client contact, obtaining medical parts like a CO2 tank and the time crunch hindering the students from being more efficient and sustainable.



However, Senum expressed that the team has been able to overcome several obstacles. For example, the bulky items took up too much space, which led the talented team to redesign the clinic's floor layout so that everything would fit. In another example, she explained, "We would have liked to do more with things such as a solar panel on the top, but we were short on time so we bought a generator." The engineer's creativity enabled them to come up with sound alternatives when they encountered obstacles with time and resources.

The mobile medical clinic is packed with impressive features that will save many lives. A whole new axle was put on the bottom and most of the electrical was redone on the inside, so it can be connected to a truck and generator. There is an ultrasound, an examination table and hopefully soon a CO2 tank. Additionally, a water system has been installed for hand washing.

The effects of this incredible clinic will last for decades to come. The mobile medical clinic will be sent to Kenya this June, when patients will begin to be treated. The nursing and engineering students who worked on it have much to be proud of. 



The mobile medical clinic team installs walls and evaluates measurements to ensure an accurate and effective product.



WORK ASSESSMENT TALENT TEAM (WATT)



The Work Assessment Talent Team (WATT) joined the Collaboratory in fall 2015. WATT's responsibilities include scheduling and facilitating Minimum Viable Progress (MVP) review sessions, recording project health and maintaining the customer relationship management system.

The team is led by project manager Rodney Green and student project manager Jake Clemens '18, who is gaining experience that will help him in his future business endeavors. "Though I have been with the Collaboratory for 11 months, I have grown so much. My position as the student project manager of the Work Assessment Talent

Team has enabled me to learn quality team building skills, and has taught me how to make mistakes and learn from them—first taking the risk of making the mistake in the first place."

Each WATT team member is assigned to a Collaboratory Discipleship Community, where they assist in the completion of MVP reports, secure panelists for review sessions, gather relevant information for review by panelists prior to MVP sessions, record the feedback received from the session and inform students about their performance.

This new process to manage project health ensures that the organization's mission is executed, work is performed efficiently and our clients receive quality deliverables. ●

137+
HOURS
OF SERVICE

FROM WATT

 **6**
MEMBERS ON WATT

39 
PROFESSIONAL
REVIEWERS

10 | **6**
PROJECTS
EXPECTED
TO **START** NEXT
SEMESTER

6
PROJECTS
EXPECTED
TO **FINISH** THIS
SEMESTER

MARKETING TEAM

The marketing team is passionate about sharing how God is using the Collaboratory! This school year focused on expanding our social media presence, introducing sector branding and updating website content.

Both the student project manager Rachel Peters '17 and the student program manager Rukshani Perera '16 fall under the leadership of Alyssa Heberlig '09 and Rodney Green, who function as co-project managers. Perera said about her experience as student program manager, "I learned a lot this year in my role as student program manager. I am so grateful for the opportunity to serve on the leadership team and also for getting to work alongside some amazing students and professionals! The dedication and passion that students have toward their projects never cease to amaze me."

The ongoing commitment to social media is made possible by the work of team members who write content, post to sites and analyze metrics. Some focus mainly on writing articles for various communication outlets. Others put their creative juices to work creating posters and digital content for the website and other Collaboratory publications. ●



140+
HOURS
OF SERVICE

FROM MARKETING

 **13**
MEMBERS ON
MARKETING

790 
FACEBOOK LIKES

TWITTER
 **34**
RETWEETS

INSTAGRAM
FOLLOWERS
 **111**

FACULTY SPOTLIGHT

DR. TEFAYOHANES YACOB, ASSISTANT PROFESSOR OF ENGINEERING

By Lorena Reinert '19



A passion for cohesive change, central to the mission of the Collaboratory, has drawn people from diverse backgrounds to join in its work. This is what led Dr. Tesfayohanes

Yacob, previously a researcher in solar-powered sanitation processes at the University of Colorado, to join Messiah's faculty in August 2015. Dr. Yacob is an assistant professor of environmental engineering and project manager for the Collaboratory.

Yacob was drawn to the organization because of its emphasis on partnerships that impact people around the world. "The Collaboratory affects people's lives directly," he said. "I wanted to be involved practically, not just do research in a lab."

As a project manager, Yacob oversees both the Futsal Court and Affordable Sanitation projects. Futsal Court began when Aroma Missions, an athletic outreach organization at Messiah, noticed that Somali immigrants living in a local community lacked a place to practice their passion: playing soccer. Aroma Missions partnered with the Collaboratory to create a modified soccer pitch for the community. The project is currently in the midst of the design phase as members work to produce a construction-level plan with the support of Yacob and other professional advisors.

The Affordable Sanitation project partners with World Vision to develop pit liners for latrines in selected districts of Ghana. The completed liners will prevent the soil collapse that often results when the sandy particles that comprise it lack cohesion. A site team will travel to Ghana in May to gather a soil analysis, evaluate costs and receive feedback from local experts

and community members. The trip will bring together vision and productivity, enabling the team to engineer a design that is effective within Ghana's specific context.

Yacob's role in the Collaboratory has allowed him to witness how it has shaped his students. Their experiences have given them knowledge of how engineering can be adapted for specific contexts. "Theories learned in class that they never thought they would apply are being used," Yacob said. As a professor and project manager, he joins in this process of growth alongside his students.

Yacob's passion and expertise lie in projects related to water and waste treatment. He is currently contemplating a new project that will enhance water filtration through the development of improved ceramic disc filters. He looks forward to continued leadership in Collaboratory projects and to positively impacting the client communities they serve. ●

RAPTOR HAND, continued from front page

to ensure that the hand only breaks at strategic points, ensuring the client will not be hurt by sharp, jagged edges.

All this work is not easy. Student project manager Timothy Gover '17 commented on the complexity of the process, "Imagine normal printing and multiply that by three." Gover and his teammates enjoy working through the challenges of the project and look forward to this summer when the final product will be introduced to their client. ●



Clockwise from top left: Timothy Gover '17, Jessica Raboci '17 and Jason Yoder '17 make up the Collaboratory's Raptor Hand team, creating a prosthetic hand using Messiah's 3D printer. The 3D pieces of the hand are ready for assembly and testing. The team presents the prosthetic hand to a 5-year-old girl to see how it fits. Raboci fine-tunes the prosthetic finger joints.

The Collaboratory could not continue to increase hope and transform lives without a broad team of sponsors.

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\$25 \$50 \$100 \$500

Other \$ _____

Check payable to Messiah College
(Please write "Collaboratory" on the memo line of your check. Please do not write individuals' names on check.)

Credit/Debit card: Visa

MasterCard Discover AMEX

Cardholder name *as it appears on card*

Card Number

Exp. Date _____/_____

Signature

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Monthly amount from my checking account
\$ _____

Please include voided check.
Choose withdrawal date below.

5th of month

20th of month

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(monthly gifts that total \$500 or more per year)

Become a Transformation Partner
(monthly gifts that total up to \$500 per year)

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