

“Approved Workers” — II Timothy 2:15

DOKIMO I ERGATAI



FALL 2013 | The newsletter of the Collaboratory

THE BETTERIDGE DYNASTY

Interviewed by Jennifer Davies '14, written by Megan Wanek '14



(Left to right) Tom '07, Andrew '09, Seth '14, and Luke Betteridge '17

Over the years, hundreds of students have taken the opportunity to develop academic and professional skills by participating in the Collaboratory for at least some part of their education at Messiah College. Under the guidance of advisors, students lead and implement projects for businesses, nonprofit organizations and communities to gain real life application in their disciplines. The Betteridge brothers are just one example of how Collaboratory involvement can be a tradition that shapes

students' education and prepares them for future careers.

The four Betteridge brothers are all engineering majors who have served or are serving in the Collaboratory. Tom Betteridge '07 was a member of the Collaboratory's water group during his last two years at Messiah College. Tom contributed to the group's goal of providing communities in developing countries with a clean water source and available well drilling solutions. He currently designs infrastructure for industrial and production plants at Design Group Facility Solutions in Concord, N.H.

Andrew Betteridge, '09, spent all four years working on the Disability Resources Tricycle project. During that time, the group improved the manufacturing process and reduced the cost of electric and hand-powered tricycles for their client the Center for the Advancement of the Handicapped, in Burkina Faso, West Africa. In the summer of 2008, Andrew traveled there with a site team to continue developing the tricycle at the center. Andrew has



Andrew '09 installs the wiring on Yempabou's electric trike during the Collaboratory summer 2008 site team trip to Burkina Faso.

stayed connected with the Collaboratory as an off-campus advisor and recently began a year of service with Serving in Mission (SIM) in Burkina Faso. He is working on Collaboratory-related projects such as well drilling, the tricycle project and community development through agricultural initiatives and water access. Andrew says the Collaboratory is a very holistic organization. He is proud to still be a part of it.

Tom and Andrew emphasize that the skills they gained from projects and service trips provided invaluable preparation for the working world. Tom lists project scheduling, communication skills, hands-on engineering and report writing as some of the skills he acquired working in the Collaboratory that carried over into his current job. Andrew says the hands-on project work and service as a group leader prepared him for project management and dealing with real-life clients, which have been huge assets during the four years since he graduated and worked at CenterPoint Engineering, Inc. He says

Brothers, continued on page 6

INSIDE

- ♦ Reflections from the past and present (p. 2)
- ♦ Strengthening connections (p. 3)
- ♦ Developing vision through new leadership and administration (p. 4)
- ♦ Voices from the Collaboratory (p. 5)
- ♦ Advisor spotlight (p. 7)
- ♦ Stay connected (p. 8)

REFLECTIONS FROM THE PAST AND PRESENT

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 twofold 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.

CONTACTS

Student Executive and Group Leaders

STUDENT DIRECTOR: Lindsey Adomat
 ASSISTANT DIRECTOR: Dylan Thomas
 STUDENT ADVANCEMENT LEADER: Meghan Wolf
 COMMUNICATIONS: Stephen Powers
 DISABILITY RESOURCES: Seth Betteridge
 EDUCATION: Sarah Gilmartin
 ENERGY: Nathan Chaney
 MICROECONOMIC DEVELOPMENT: David Whiting and Ryan Miller
 TRANSPORTATION: Aaron Black
 WATER: Bethany Bender and Marcus Upton

Advisors

DIRECTOR OF THE COLLABORATORY: David Vader
 MANAGER OF THE COLLABORATORY: Rodney Green
 COMMUNICATIONS TECHNOLOGY: Randall Fish, David Owen, Nancy Patrick, Harold Underwood
 DISABILITY RESOURCES: Andrew Betteridge, Alex Brubaker, Jodie Haak, Angela Hare, Nate Kamban, John Meyer, W. Ray Norman, Barbara Ressler, Lamarr Widmer
 EDUCATION: Angela Hare
 ENERGY: Tom Austin, Craig Dalen, Carl Erikson, Liam Tanis
 MICROECONOMIC DEVELOPMENT: |Lynn Conrady, Connie Ostwald
 ADVANCEMENT: Rodney Green, Alyssa Heberlig, Jim Krimmel, Priscilla Morales, Scott Weaver
 TRANSPORTATION: Randy Jackson, Donald Pratt
 WATER: Tony Beers, Robert Clancy, Bryan Hoover, Joseph Longenecker, Earl Swope, Ariela Vader, David Vader

WORD FROM THE STUDENT DIRECTOR



Busyness. Everyone I know has an extremely full schedule and many things to do, which I am not exempt from. There are days when I have a to-do list a mile long and I do not know how I will finish everything. The worst part is that it never ends.

Something I have reflected on this semester is the importance of setting aside time to spend with God, especially in the midst of busyness. It is so easy to get caught up in the things I have to do—to the point it feels like I do not have enough time for God. I forget that when I put my to-do list above God, I push myself away from the only thing that can truly sustain me. In the midst of trying to get everything done, I cut myself off from the greatest source of peace I will ever experience.

I have also realized that my busyness becomes an unintentional source of pride. When I allow my schedule to take priority over God, it says my work is more important than Him, and I don't need Him. This is a massive lie. It is only by His grace that I am able to make it through each and every day.

I also see the importance of spending time alone with God when I look at Jesus' example. Numerous times throughout the Gospels, Jesus would go off to a solitary place and spend time in prayer with his Father. If this time of solitude was important to my Lord and Savior, it should be important to me as well.

This topic of busyness is especially pertinent to the Collaboratory. There are many great people who do a lot of really good things that help numerous people. But in the midst of the work, let's not lose ourselves and forget who is at the center of our work and our lives. We work to serve Jesus and to spread His love to those scattered around the globe. It is impossible to do this without staying connected to Him.

Lindsey Adomat, student director

CLASS OF 1963 GIFT

Sam Stoner, a member of the class of 1963, says that he has seen students' lives and attitudes change as they have served for others through the Collaboratory. This sentiment led the class of 1963 to give more than \$11,000, as of Homecoming 2013, to subsidize Collaboratory students' site team trips. We are extremely grateful for the generosity of the class of 1963, and are thrilled that more students will have the opportunity to see the work of the Collaboratory be implemented around the world.

SPONSOR THE COLLABORATORY

The Collaboratory could not achieve its mission without a broad team of sponsors.

To support the Collaboratory financially:

BY CHECK: Please make checks payable to *Messiah College*. Clearly indicate on the memo line or in an attached note that the gift is to support the Collaboratory. Mail checks to: Office of Development, Messiah College, One College Avenue Suite 3013, Mechanicsburg PA 17055

BY GIVING ONLINE: Select "Give online" on our website: messiah.edu/collaboratory.

Please contact us at our mailing address:

The Collaboratory
 Messiah College
 One College Avenue Suite 3034
 Mechanicsburg PA 17055
Collaboratory@messiah.edu
 717-796-1800, ext. 7226

STRENGTHENING CONNECTIONS

NEW CONTRACT WITH SAWYER PRODUCTS AND ENCOUNTERING THE FIELD OF BIOLOGY IN THE COLLABORATORY

By Megan Wanek '14



Janelle Veazey '14 and Jeff Erikson

At the beginning of the fall 2013 semester, the Collaboratory water testing team, a branch of the Collaboratory water group, acquired a new research opportunity from Sawyer Products. Sawyer Products offers advanced technological solutions for water filtration. After one of their testing laboratories shut down, the company asked the team to provide an independent testing laboratory for Hollow Fiber Membrane (HFM) bucket filters. Sawyer is funding the project with equipment and supplies for the team to perform the experiment at Messiah College. The Collaboratory has partnered with Sawyer for a while, but a project of this size is a new and exciting challenge for the water testing team.

HFM filters, used by other water groups in the Collaboratory, allow rapid water flow and are easy to transport due to their size and weight. The testing team is "challenge-testing" these filters to determine whether they can function at an optimal level under extreme and abnormal conditions. Professor Jeff Erikson, advisor to the testing team, researched Environmental Protection Agency (EPA) standards and protocols for safety before starting the experiment to ensure that results of the test are as official as possible. As a safety precaution, the testing team is using an EPA-approved list of organisms that mimic the size of targeted bacteria and protozoans, but are not as dangerous to work with.

First, the team sterilizes water from



Laura Ritenour '16 and Elliot Rossomme '17 make plates to grow bacteria.

the Yellow Breeches and adds the required amount of organic carbon and bacterial cells. When it has reached the standard for the experiment, vacuum bottles force the water and organisms out of the bottle and through the Sawyer HFM filter. After all the water has filtered through, they perform microbiological techniques to enhance growth of bacteria from the filtered water. The team counts the number of bacterial colonies on petri plates after 24 hours of growth to compute the number of original bacteria caught in the filter.

"This is the first time we've worked for this client on this scale, and we're really excited about the research and future opportunities."

— Bethany Bender

The results reported by the water testing team will provide Sawyer with precise information to determine how well HFM filters function under extreme conditions. These filters are brought to countries where water contamination is a serious problem and quality water filters are a health necessity. In 2012, members of the Collaboratory flew to Nicaragua with 50 HFM bucket filters and one larger HFM filter stowed in their backpacks. They



Laura Ritenour '16 determines how much carbon is present from a total organic carbon test.

distributed bucket filters to households and instructed families in water hygiene and proper filter care. They placed the large filter on a reservoir used by an orphanage.

This contract also marks further expansion for the team, which has gained new members and more contract work in the past few years from clients such as Sawyer, Collaboratory groups and Messiah College's biology department. Janelle Veazey '14, water testing team leader, says she joined the Collaboratory because she wanted practical application of real projects, not just in-class exercises. Veazey is a senior who has remained in water testing since her freshman year. She says, "It's good for people in the sciences to have a group where you can actually use a lot of the skills and techniques you learn in biology and chemistry classes."

The team has prepared for the research and will be running tests throughout the semester. If the experiment is successful, Sawyer may ask the team to analyze other filters, providing an opportunity to establish a permanent water laboratory and expand the water group's services. Bethany Bender, the water group leader, is hopeful about the possibilities of this new project. She says, "This is the first time we've worked for this client on this scale, and we're really excited about the research and future opportunities." For further information about project details or to get involved in the testing, contact the water group at collabwater@messiah.edu.

MESSIAH COLLEGE WELCOMES NEW FACULTY

By Erika Campbell '14



Dr. Brian Swartz



Dr. Thomas Soerens

The Messiah College engineering department is growing in size and influence, while also embracing change in many different sectors to accommodate student and market demands. As the 2013-2014 academic school year is passing by, students notice the engineering department's new employees, new concentrations and the building space addition to Frey academic hall, which engineering students call their second home.

Dr. Brian Swartz and Dr. Thomas Soerens join Messiah's engineering department as qualified associate professors of various engineering classes.

Messiah is in the process of introducing a civil engineering concentration to the department's esteemed program. Swartz has an impressive background in the field of civil engineering and will teach the majority of these expected classes.

Swartz received his degrees from Penn State University and spent time working there as a staff member. Prior to accepting his new position at Messiah, Swartz was a professor of civil engineering at the University of Hartford.

"I chose Messiah because I have a desire to be at a teaching-focused institution and to be on a Christian campus," says Swartz. He is excited for teaching, student advising and helping students find ways to be successful while also helping them find their calling in life. Swartz has grown fond of the people who make up Messiah's teaching environment and is impressed with both the students and his colleagues.

Not only does Swartz plan to play a role in developing this new concentration, but he hopes to establish civil engineering oriented projects in the Collaboratory. These projects may include, but are not limited to, designing and constructing bridges, dams and other civil structures. "I have worked in both bridge design and heavy construction and an area of research has been concrete

bridge systems," says Swartz.

"One of my long-term goals is to lead projects within the Collaboratory related to bridge design and civil engineering," says Swartz. He is passionate about expanding the Messiah College engineering department and developing countries' access of transportation involving the construction of bridges, such as pedestrian bridges. Swartz hopes that students dedicated to the Collaboratory can also engage in sharing their classroom education to areas less informed.

Dr. Thomas Soerens, associate professor of engineering, received his undergraduate and doctoral degree from the University of Wisconsin. Prior to coming to Messiah, Soerens spent time at the University of Arkansas where he taught and researched groundwater remediation, water quality monitoring, biofuel waste treatment and low impact development.

He helped establish an ongoing service-learning study abroad program in Belize and serves as the associate editor of the International Journal for Service Learning in Engineering. Soerens has worked in numerous countries, including two years of service as a water and sanitation engineer in the Maldiv Islands. Because of his educational background in water resources and environmental engineering, he acts as the advisor for the Collaboratory's water and

energy groups.

The opportunity to be involved with the Collaboratory intrigued Soerens to explore Messiah. Since joining as a new faculty member, Soerens is excited to be involved with students' projects and loves the sense of community and integration of different disciplines that Messiah offers.

Soerens is involved with a new project, Brighter Days Briquettes, that creates an alternative to charcoal and wood in Malawi. These fuel briquettes are made from available agricultural waste that become an alternative to charcoal and wood, which act as major fuel sources for most Malawians. The project's concept explains that due to alarming rates of deforestation, alternative fuels are in greater demand. Utilizing local products and equipment, a network of profitable briquettes franchises will manufacture and market fuel briquettes to develop a sustainable and eco-friendly economy.

"I hope to see new projects developed and see an increased depth and scale of project application among students and organizations," says Soerens. Soerens shares his passion for teaching by being able to help students find their place and ministry in the world.

Messiah and the Collaboratory are excited to have Swartz and Soerens as part of the community.



Making fuel briquettes, as shown here, can serve as an alternative for charcoal and wood.

DR. DAVID VADER, DIRECTOR OF THE COLLABORATORY



"The Collaboratory helps me serve Christ in two ways. First, I am able to use my professional abilities and give financial gifts to bring good news to some whom Jesus called "the least of these brothers and sisters of mine." Second, the Collaboratory enables me to invest in the lives of wonderful people, students and leaders of the Collaboratory who are building themselves up in hope for service to Christ and his kingdom. It is a privilege to serve the next generation of servants and leaders for the Church and our world."

NATE KAMBAN, PROJECT MANAGER FOR AFRICA WASH AND DISABILITIES STUDY



"The Collaboratory provides opportunities for students to utilize their gifts to impact the world around them. As students engage in this work, whether from a classroom at Messiah or a rural community in Africa, a heart change also develops. Everyday dreams are replaced with goals that are centered on Christ and his mission to seek and to save that which was lost. Simply put, the Collaboratory provides opportunities for students to transform their dreams."

RODNEY GREEN, PROGRAM MANAGER OF THE COLLABORATORY



"The governance structure of the Collaboratory includes students as key decision makers, leaders and responsibility bearers. I can't think of a better way to prepare students for the next steps of their vocational calling, and it's a privilege to walk with them on that journey."

SHANNON WALKER, ADMINISTRATIVE ASSISTANT OF THE COLLABORATORY



"I've had the privilege of working with the Collaboratory for almost a year, and it has been a great experience. The dedication of the staff, advisors and student leaders has been inspiring. It's incredible to work with a team that has a vision to go beyond themselves and change the world."

TONY BEERS, PROJECT MANAGER FOR GARDEN WATER ACCESS PROJECT



"I love providing engineering support for practitioners in the field. It is exciting to know that my work in the Collaboratory will assist brave men and women who serve their communities in a ministry of water, sanitation and hygiene in Africa."



Luke '17 (middle) and the water team using a Bailer Bit to remove dirt and water.



Luke '17 (front right) and the water group practice percussive well drilling techniques.

this experience can set the bar for Messiah students when they get out of school because the knowledge and practice gained by working with the Collaboratory are desirable to potential employers.

Seth Betteridge is a senior this year and, like Andrew, has worked on the tricycle project all four years. He first heard about the Collaboratory from his brothers and says, "A big thing that continued to draw me was the fact that I was able to apply what I was learning in the classroom to real life situations and to be able to help real people." Another positive aspect of the Collaboratory was his brother, Andrew. Seth says he enjoys being able to see and talk with Andrew at Collaboratory meetings.

Seth has been the disability resource group leader since his sophomore year and says this responsibility strengthened his leadership, project management and public speaking skills. He hopes to continue supporting the Collaboratory after graduation. He also had the opportunity to serve abroad with the Collaboratory to Burkina Faso in January 2013, where his team implemented tricycle designs and modifications they developed at Messiah

College. In the summer, Seth traveled to Ghana for an internship with the Collaboratory and World Vision, where he worked with the African WASH and Disability Study to distribute latrine chairs and gallon tippers developed at Messiah College to clients. He says, "It was good to see how receptive they were to the devices, how appreciative they were and ultimately how we can play a role in their journey towards a better quality of life." Seth says although the two trips were very different experiences, both were enjoyable and rewarding.

Luke Betteridge is in his first year at Messiah College after spending six months abroad for Youth with a Mission in Hawaii for discipleship training and then in Cape Town, South Africa ministering to college students. Luke says he watched Andrew and Seth's perspectives change after traveling with the Collaboratory abroad and has seen them use their skills to care for other people. Luke always thought the Collaboratory was a great opportunity to serve and use classroom learning to help others. He says, "I've seen it happen three times, it's kind of cool to be doing it myself." Luke joined the Collaboratory Garden Water project this

semester and says he is looking forward to going abroad on Collaboratory service trips and allowing God to shape him while serving on projects and using what he is learning to the best of his ability.

In addition to real-life application and service both at home and abroad, the Betteridge brothers reflect on how the Collaboratory has impacted their faith. Tom says, "The Collaboratory gave me a way to help balance my academic career while working on my spiritual walk and provided an opportunity to better the world through the Gospel." Seth also says serving people in need is something that attracted him to his project and has continued to strengthen his relationship with God. Although just beginning his journey in Collaboratory work, Luke says he grew in his faith during his service with Youth with a Mission and believes the Collaboratory will help in the same way. Finally, Andrew names his experience in Burkina Faso as a time when God was shaping and challenging him. He likes the fact that in the Collaboratory there is a focus on discipleship: not just a place for engineers, but a place for engineers who desire to glorify God.



Andrew '09 works on an electric trike wheel during the summer 2008 site team trip to Burkina Faso.



Seth '14 (left) and Jared Landis '13 (right) pose with their trike client, Diebidi (center).



Seth '14 carefully create threads for an electric trike's throttle lever for Yempabou, another electric trike client.

ADVISOR SPOTLIGHT

Advisor spotlights highlight those who invest their time and talents to further the mission of the Collaboratory.



TOM AUSTIN, ENERGY GROUP ADVISOR

Q: What attracted you to the Collaboratory?

A: I was attracted to the Collaboratory because I wanted to give back and help students with an experience that would aid them for the rest of their lives.

Q: What is your favorite thing about the Collaboratory?

A: The Collaboratory stretches students beyond the classroom and exposes them to experiences that are hard to be found elsewhere. They get the opportunity to work with clients

with real problems and come up with real solutions. Many projects interact with a part of the world that some are not exposed to. Everyone who is involved with the Collaboratory are putting a lot at risk such as the risk of having their lives changed, including me.



JOSEPH LONGENECKER, WATER GROUP ADVISOR

Q: What attracted you to the Collaboratory?

A: The Collaboratory gave me hope when I was a student who had a great interest in the study of engineering but was discouraged at the prospect of using my education to create more things people don't need. Through the Collaboratory, I was confronted with basic human needs that were left unmet in this world, which I might have had the power to meet, and this thought excited me. Since then I have become less idealistic and more effective, and the Collaboratory's structure and discipline have contributed largely to this. The Collaboratory has continued to refine tools to help their teams define a project based on the clients'

needs and then execute and deliver a solution within a promised time. This is not only good for our clients, it's valuable project management experience for students. In the education system, we rarely get to work on problems that are not set up for us as teaching exercises. The Collaboratory projects are not easy, and they don't have a single correct solution. There is room for a lot of creativity, but we are tempered by our responsibility to our clients, who are waiting for a solution to help them overcome a difficulty in their lives. It's very satisfying to learn while doing something useful and following a compelling vision, and this is what keeps me coming back to the Collaboratory as an advisor.

Q: What is your favorite thing about the Collaboratory?

A: Above everything else good about the Collaboratory, I value the way in which it has expanded my worldview. I've learned that we must think of what people have, not what they lack. It is a joy to work hard at a challenging problem to help someone in need, knowing that this is just half of the exchange and that through this joint venture they will have the opportunity to teach me as well. I value the relationships with the Burkinabe with whom I worked more than any other deliverable that I produced for the project.



RON HODGE, ECONOMIC EMPOWERMENT GROUP ADVISOR AND ASSISTANT TO THE DIRECTOR FOR PROGRAM DEVELOPMENT

Q: What attracted you to the Collaboratory?

A: The Collaboratory provides a unique opportunity for students to apply their academic learning on real world projects for customers with tangible deliverables that matter. To

enable this, the Collaboratory trains and challenges students to learn key skills needed to get their projects done and through others makes a positive difference for our customers. I found this very compelling and an opportunity I never had during my college days.

Q: What is your favorite thing about the Collaboratory?

A: Seeing students glow with excitement when they accomplish a Collaboratory task well and watching students grow in their life skills and personal faith.

STAY CONNECTED

NEW WAYS TO INVEST IN THE COLLABORATORY

Cornerstone Investor: \$42 per month/\$500 per year or more

Transformation Partner: \$5 to \$42 per month

The Collaboratory Community Engagement Fund:

Fostering student transformation by subsidizing site team travel

Sign up at messiah.edu/collaboratory and stay connected
to the Collaboratory by receiving email updates!



STUDENT ORGANIZATION INVESTS IN THE COLLABORATORY

By Erika Campbell '14

The Messiah College Investment Club recently gave a gift of \$3,000 to the Collaboratory. After gaining more than \$15,000 of portfolio profit in 2012, the Investment Club acted on one of their goals by using their profits to give back to other Messiah College student-led initiatives.

Matthew Bergey, co-president of the Investment Club and four-year member

of the Collaboratory, mentioned that they provided 75 percent of their 2012 annual funds to the Collaboratory. The Investment Club strives to offer financial support to service-oriented organizations, like the Collaboratory, that produce quality work.

This gift was distributed among multiple group projects within the Collaboratory. These groups included the

energy group, microeconomic development group, and water group, and each received at least \$500 from the club.

“We hope that our gifts will help students in their work of using their majors and interests to enact real change in the developing world,” shared Bergey.