



Several years ago, Dr. Reid Bishop made the bold move to leave a tenured position to join the faculty of Belhaven University because he saw a once-in-a-lifetime opportunity to build something from scratch in an academic environment that encouraged innovation. Now a professor of Chemistry and Division Chair of Natural Sciences at Belhaven University, Bishop oversees a learning environment that is distinct from other programs and offers enhanced facilities with modern scientific instrumentation while embracing green practices and sustainability. It's a program that connects science with Belhaven's biblical worldview.

PROFESSOR SPOTLIGHT

by Rachel Clevenger

Belhaven University: Modern Science & Biblical Teachings

The Art of Science

Dr. Reid Bishop did not initially plan to be a scientist. His first academic passions were in the Fine Arts, and he wanted to be a sculptor or painter. As he continued on that path, he realized he needed a smart way to monetize those gifts, so he looked into scientific illustrations, and he soon found himself moving in another direction.

After transitioning from the Fine Arts to a focus on science, he assumed he would stay in “hardcore research science”; as he recalls those choices now, he believes he had “a very narrow kind of view.” Even within the context of being a Christian in science, as he plodded away making all the appropriate moves in a traditional career trajectory, he realized that God was not calling him in that direction.

Then, both of his parents fell ill. After his father succumbed to a difficult bout with cancer, Bishop realized that he needed to find a life that was about more than being “chained to a lab bench.” Connecting with the National Audubon Society, he started appreciating “idealistic, aesthetic things” in a way that he had not before, and eventually he realized there had been a fundamental shift in his perspective, which forever altered the way he viewed our approach to problems that need solutions.

A Mission of Innovation

Soon after this realization, Bishop left a tenured position and landed at Belhaven at what felt like just the right moment. The science program was uneven in spots, weighted toward Biology, and President Roger Parrott wanted something innovative, exciting, and different. The older buildings and traditional teaching philosophies were all replaced with something at once more modern and more meaningful. They realized, Bishop explains, that they did not have to do things the same way everyone else was doing them.

Parrott, having built a Fine Arts program to rival any other in the nation, was ready to turn his attention to other endeavors. He wanted to find a way to be on the leading edge of quality, and he knew Bishop could build that program, given the funding. Bishop adds that in any smaller, mission-oriented school there may not be “loads of cash to spend,” yet he was asked, “If you could build what you wanted, what would you build?”

When Parrott met with the architect after Bishop had offered his input and wish-list, the architect said he’d never had a faculty member ask for ways they could spend less money on a new building. “When you have faculty members like that, it’s easy to want to find them the money,” Parrott explains. “He doesn’t ask for the moon,” Parrott adds, and that gives them the opportunity to “put the dollars in places that really count.”

A new science building was developed—the specifics of which are covered in more detail by Belhaven’s David Sprayberry on page 16—and with the new structure and program came new opportunities for hiring. Bishop also notes they were expanding the program at a time when equipment that was once prohibitively expensive was getting cheaper and smaller. Bishop sees his role as an encourager of the good work being done by the “young, energetic, and enthusiastic” math and science faculty who are all like-minded people who have “great hearts.”

God Made Us All Scientists

Bishop explains that Belhaven students are taught not only “the stuff of science,” but also the applications for that science—moments where they can put their work in perspective and recognize how science can serve others. In fact, Bishop believes this concept may explain why so many students across the country claim they don’t enjoy science; perhaps it’s not being taught correctly.

Additionally, he wanted to ask big questions as they planned the work for Belhaven students in general and the role of his department specifically: What is the value of science? What are the limitations of science? How can science help with public health or with conservation?

Students aren’t inspired, he continues, by courses that serve up science as something dry and methodical. He wants students to find a



problem first—something they feel connected to—and then determine what science they need to learn and practice in order to seek answers for that problem.

If a problem is inquiry-based, he adds, you don't have to learn the entire periodic table before you start addressing that problem. He's quick to add, however, that these courses aren't "Chemistry for Cowboys" or "Rocks for Jocks"—as some courses have been dubbed on other campuses. Even in a class filled with students of wildly varying abilities and majors from across the board, there is absolutely no "dumbing down" of the content, and the fundamentals are still there.

The difference is that experiments at Belhaven are designed to have a purpose. Rather than using lab resources to conduct General Lab Experiment A, General Lab Experiment B, and so on—students are challenged to develop experiments that serve a purpose and to use those resources for something that matters. In short, he adds, they can spend time "rehashing the same old junk," or they can focus on being innovative and creative.

He also sees no disconnect between a Christian-based university—with a motto extolling the virtues of serving rather than being served—doing important scientific work. Since we go about our days constantly learning through the process of trial-and-error, Bishop concludes, "God made us all scientists."

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Local Projects

In a recent project with the Jackson Zoo, dance majors from the classes have interpreted the movement of animals, some students have analyzed the quality of water coming in and out of the local zoo, and others have examined animal enclosures to determine how closely those spaces mimic their natural habitats.

Belhaven has also developed a partnership with Wildlife Mississippi, focusing on 3000 acres of wildlife wetlands deeded from the Department of Transportation; students have been working on categorizing the value of The Fannye Cook Natural Area to the surrounding urban environment, learning from one of the largest urban wetlands. Additionally, they are partnered with TARA Wildlife in Vicksburg, Mississippi, focused on studying the Mississippi River, which connects 45% of the nation's watershed and serves as a huge migratory byway.

Additionally, they are partnering with Friends of the Mississippi River Basin Model to develop a virtual model of the Mississippi River Basin Model, a structure located only a few miles from the Belhaven campus; built by German prisoners of war in order for American soldiers to consider how to best defend against an invading power, the Mississippi River Basin Model is the largest small-scale model ever built, stretching eight miles long and covering 200 acres.

New Ways to Think About Science

Last year at Belhaven, in his presentation for the STEM Education Symposium that they organized on campus, Bishop outlined for his audience the way Belhaven had established partnerships in their community that actively engaged their Science and Mathematics instructors and students in "meaningful and relevant educational experiences." All of their students, Bishop adds,



are using science in ways that assist real-world efforts; because of this, students are getting jobs, earning internships, and finding new ways of thinking about science.

This work, Bishop goes on to say, helps connect students to different paths via their coursework and all work toward instilling “an Entrepreneurial Spirit,” so students are trained in bringing value to their communities, big and small. Bishop explains that both instructors and students benefit when courses and programs are integrated with real-world problems, especially when those issues result in opportunities to build local connections.

He believes math and science textbooks are often detached, highly generalized perspectives that seem to hold no real-world, immediate value for the average student. In order to overcome that disconnect, he encourages instructors to augment STEM courses with resources gained via partnerships with local and regional entities—zoos, museums, business, parks, and government or non-government organizations. He believes this allows teachers to “breathe much needed life into their potentially stale course material.”

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As a natural offshoot of his love of science and concern for the environment, Bishop has led the charge in decreasing the environmental footprint of the Belhaven University campus labs by using the principles of green chemistry.

Breathing Life into Stale Material

Former student Jeremiah Reese, now working toward his next degree in medical school, states that Bishop is "no ordinary professor" who gets stuck using the same material and methods year after year. "Dr. Bishop prefers innovation to stagnancy," Reese adds "and works hard at developing new curriculum."

For example, in organic chemistry, Bishop loaned ball-and-stick models to his students so they could build molecules to help them learn complicated concepts. Reese recalls one day that Bishop was teaching molecular vibrations, and he walked to the corner of the classroom, tapping his shoulders on the walls—back and forth—to show how molecular vibrations decease in certain circumstances. "Dr. Bishop loves learning, and

it showed in his chemistry skills and teaching," Reese adds. His favorite expression that Bishop often used was, "I could do that in 15 minutes"—a phrase he would throw out during experiments, a claim that was in essence "a healthy challenge to students to work efficiently."

Reese praises Bishop most for creating something entirely new for Belhaven students. "His premise was that at Belhaven we have art, history, English, Literature requirements, but not a science class for non-science majors," Reese explains, so Bishop wanted to create a class structured around upperclassmen in the sciences, where each group evaluated each of their group's members; participants were held accountable for their assignments. The groups wrote and conducted an experiment, and their findings were

presented at the end of the semester, where Bishop kept it interesting and competitive by offering a reward for the best plan and results. "From the perspective of a chemistry student, I benefited from learning how to communicate with students with passions outside of the sciences," Reese explains. "I also began learning how to assemble teams for large experiments."

Belhaven student Yaharim Satterwhite is currently benefitting from Bishop's pedagogical talents this semester. She notes that a smaller university, where the class size may only have four or five students, has offered an education unlike anything she's experienced before Belhaven. Meeting Bishop, she notes, has similarly been life-changing. "Dr. Bishop is a very busy man," she adds, "yet he still devotes so much time to his students, so they can excel in any of his classes."

Green Chemistry: Biblical Stewardship in Action

As a natural offshoot of his love of science and concern for the environment, Bishop has led the charge in decreasing the environmental footprint of the campus labs by using the principles of green

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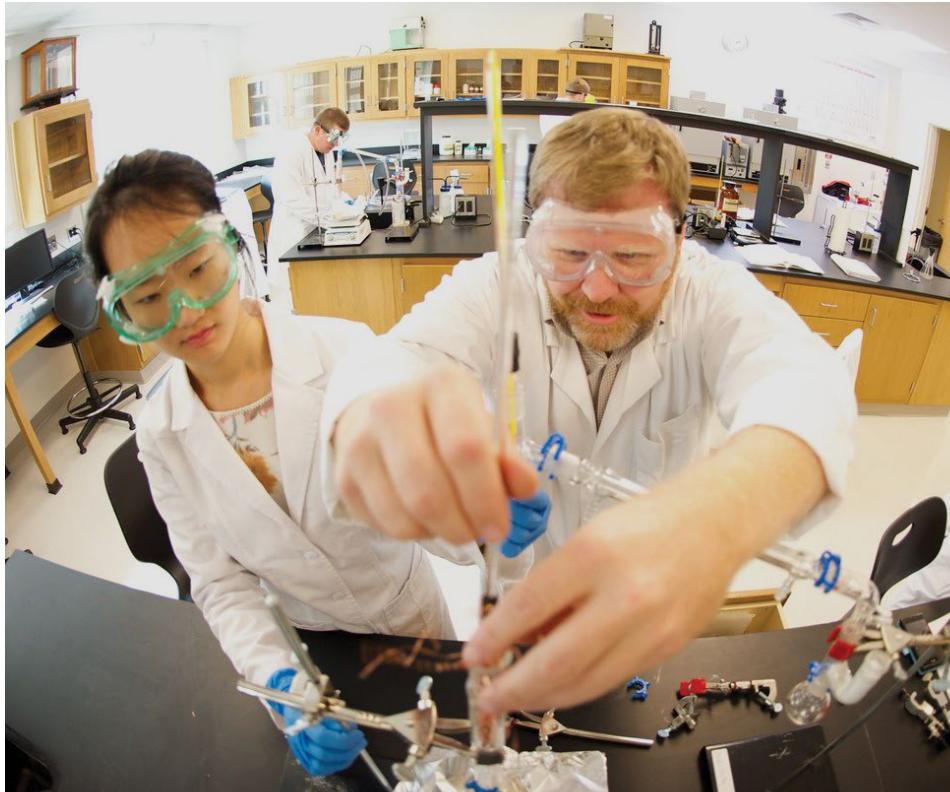
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chemistry. While some improvements take time and money, many of the goals for sustainability can be achieved by simple changes in human behavior. He notes, "If you can work smarter, why don't you?" Certainly, chemistry programs are known for the amount of hazardous waste produced; as a conservationist, he adds, he "couldn't live with that." Thus, he built the entire department on green principles, which he sees as "biblical stewardship in action."

Rose Mary Foncree, part of the English faculty at Belhaven, has worked on a class with Bishop, as they are both passionate conservationists who want to encourage students to learn more about their responsibility to the environment. The Literature of Ecology course began, she explains, because Belhaven wanted to offer more electives for their students, and in her work with Bishop, she's watched students who were initially resistant to any discussion of environmental issues become supporters of environmental protections and cognizant of dangers to the environment.

While Bishop teases that he's a "professional biochemist but only a novice ecologist," Foncree believes Bishop's experiences with the

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Audubon Society offer students something special and distinct, since she considers herself more theoretical in her approaches. Because he has taken students into the field, she explains, Bishop “brings authenticity.”

Additionally, an important goal of the class, Foncree explains, is for students to analyze the literature of ecology from a biblical perspective. Science can be a “boogeyman to Christians,” Bishop admits, or secular people can be leery of the work of Christian scientists, but he sees the connection clearly between the spiritual/natural and scientific/academic worlds.

Even in a dominion model, he explains, “Christians aren’t absolved of protecting the planet.” President Parrott agrees, noting that it’s a Christian responsibility to care for and protect the earth, while it’s important to do so in a “meaningful and balanced way.” Belhaven is seeking that exact balance.

Science Education for New Civic Engagements and Responsibilities

Dr. Cathy Middlecamp, a professor in the Nelson Institute for Environmental Studies at the University of Wisconsin-Madison, is one

of Bishop’s colleagues in SENCER (Science Education for New Civic Engagements and Responsibilities). She notes that the Mississippi Delta has been a “wonderful playground” for Bishop’s work.

Aside from his own talents, Bishop has been blessed with “good players and good backing,” Middlecamp observes, which leaves him poised to do great work at a university that has already devoted itself to service and engagement, so faculty aren’t pressed to seek out students willing to share their time and energy to better their communities. “It’s there,” she adds, “You don’t have to go looking for it.”

Dr. Richard Sheardy of Texas Woman’s University notes that he “has known Reid scientifically for a long time,” as they have overlapping scholarly interests, and they are both deeply committed to SENCER; Sheardy is SCI-Southwest Co-Director. He states that while the project began about seven years ago, it became a center for innovation soon after, and part of his job became recruiting other schools into the process. Naturally, he thought of Bishop; now Bishop serves on the Leadership Council. Sheardy

sums up SENCER at a “network of people with really cool ideas about how to help students learn.”

He is collaborating with Bishop currently on a course about the Mississippi River—the culture, the environment, the ecology, and the inter-related nature of all of those things. His appreciation for his colleague’s talents don’t stop at the academic, though; he praises Bishop’s work as a teacher, as a worship leader (who Sheardy saw preach, bringing a roomful of people to tears with a stirring message), as a musician, and as an artist. He concludes that his colleague Reid Bishop is “really quite a remarkable guy.”



ABOUT THE AUTHOR: Dr. Rachel James Clevenger earned her M.Ed. degree from Mississippi College. After finishing her PhD in Composition and Rhetoric, she taught and served as the University Writing Center Director for Birmingham Southern College and University of Alabama at Birmingham. Most recently, she taught Business Communications at Samford University.

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