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Perfecting Their Craft

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Perfecting their craft

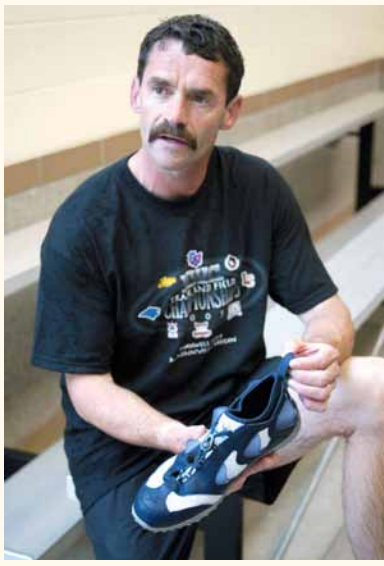
What makes a great teacher? An inquiring mind, mastery of a subject and superior communication skills are essential. But a zest for life, passionate engagement in one's field and a desire to cross over to other interests and disciplines are hallmarks of the finest professors. Who knew that a chemistry professor sings and acts, an exercise physiology/biomechanics professor invents specialized athletic shoes, or an education professor is nationally recognized for hands-on teaching of math with geometrical solids that allow visual learners to excel? Linfield faculty are well-rounded people whose passions are as varied as the subjects they teach. Five professors are profiled here, offering glimpses of how their work, both within and outside of their chosen professions, makes them better teachers.

Barbara Drake

Scott Chambers

Nancy Drickey

Jim Diamond



Garry Killgore

Garry Killgore instructs students in the pool

When Garry Killgore began the research for his doctoral dissertation, little did he know he would end up selling shoes.

Four years and countless designs later, that's exactly what he is doing. But this isn't just any shoe. It's the AQx, the world's first deep-water running shoe designed to maximize training and rehabilitation while minimizing injury.

Killgore's foray into shoe manufacturing is a result of research exploring the physiology and biomechanics of deep-water running styles. The project has resulted in collaborative research with Linfield students and in the founding of a new company in McMinnville.

"I didn't do this with the idea of developing a new shoe, but for a better understanding of what deep-water running should do for people," said Killgore, professor of health, human performance and athletics and AQx Sports founder and chief technology officer.

"My hope was just to shed a little more light on the proper method for using deep-water running and how it could be applied to populations beyond athletes."

Killgore did that and a whole lot more. Injured athletes have long used the pool as part of their therapy when recovering from injuries. Killgore's research showed that to be effective, the deep-water running movement must mimic land-based running. He found the cross-country style of motion imitates land-based running better than the conventional high-knee motion. And if you couple that with a shoe, you get even better results.

The problem? A shoe designed specifically for use in the pool did not exist.

Enter Jeff Thomas '90, a local entrepreneur and marketing expert, who now serves as president and general manager of AQx Sports. Thomas had already founded and sold Coil Solutions, a garden hose company, so he had the expertise to develop a product and take it to market. They enlisted the help of four engineers who had worked for Hewlett-Packard and a consultant on manufacturing in Asia.

Once the team was assembled, the fun really began, when each person was charged with coming up with a prototype shoe for Killgore and his students to try.

The first prototypes – one made of boots and another sporting metal drawer handles – seemed more appropriate for Frankenstein's monster than for training, Killgore said with a laugh.

"We had some very awkward things, but we were on the right track," he added.

The boots were replaced with Killgore's running shoes, and plastic "scoops" took the place of the handles to create drag. Killgore, who has tested each model, kept revising the design, trimming the scoops until their size and location on the shoe seemed optimal.

"The challenge was to create a shoe that doesn't have so much resistance that the overall gait pattern is compromised, which could invite injuries," Killgore said.

The beauty of the shoe is its broad-based appeal, which goes beyond athletes. Because using the shoe in water reduces the stress on muscles and joints, individuals with a wide range of medical conditions can benefit from it. For example, people with osteoporosis, diabetes, or balance problems can increase their strength and exercise by using the shoe in the pool.

"Water aerobics enthusiasts will be thrilled, since they are always looking for another way to increase resistance," Killgore said. "There isn't a population you can name that won't benefit from this."

Killgore's work reaches inside his Linfield class-

room. In addition to the students who worked on the initial research, three others are investigating ancillary issues. The work makes him a better teacher, Killgore said, because the students see the passion he brings to the project and they, too, get excited.

"This challenges me to find a way to communicate my philosophy of human movement that embraces how interconnected everything is," he said. "I've learned to not always think in a linear fashion and to be open to following tangents. Sometimes those tangents lead you to some outstanding revelations."

Killgore and the team continue to refine and develop the shoe. A patent is pending and the shoe is being marketed on the website www.deepwaterrunner.com, and will be featured in a number of catalogs this fall.

"It's one thing to have an idea, but it takes a few people putting their heads together to make it work," Killgore said. "This was really a group process and without everyone in the group, I don't think we would be where we are right now."

Nancy Drickey gives students math they can hold in their hands.

Sifting through bins full of colorful shapes, she pulls out handfuls of color tiles, pattern blocks and tangrams, and arranges them on a table. Nearby, similar shapes fill a computer screen. These physical and virtual tools, called manipulatives, help teach everything from counting and patterning to place values and fractions.

The colorful blocks and shapes aren't playthings, but they can be fun. That's the message Drickey, assistant professor of education, is sharing with her Linfield College students, many of whom are future math teachers.

Nancy Drickey and Magen Marshall '07

"I feel passionate about the need for good math teachers," said Drickey, who taught middle school and high school for 13 years before pursuing a doctorate. "That's why I'm here. I want to make a difference."

Drickey, nationally recognized for her expertise in the area of physical and virtual manipulatives, brings her knowledge of math education into her Linfield classroom on a daily basis.

As a doctoral student, she compared three methods of teaching sixth-grade math. She found students using the computer programs and manipulatives stayed on task and scored higher on tests than those in the traditional discussion groups.

"A lot of students are visual learners and using these tools helps them understand the concepts," explained Drickey, who joined the Linfield faculty in 2001. "Think about how you divide – you guess and then you multiply, and then you subtract and bring down another number, and then you guess how many times a number will go into that. It's so abstract."

Drickey, a visual learner herself, simplifies the process using base-10 blocks. She said the hands-on approach meets students' different learning styles.

"If I can see these things, I can understand it better than just looking at numbers on a page," she said. "The kids really like working with the manipulatives and they report understanding the math better."

Drickey takes every opportunity to tout the advantages of hands-on math. She has presented her research at conferences such as the National Council of Teachers of Math, the National Council of Supervisors of Math, Northwest Math Meetings, Teachers of Teachers of Math and Oregon Math Leaders.

Her Linfield students regularly evaluate and demonstrate new products in class. They've also assisted Drickey with presentations at conferences.

"They are experts," she said. "They get up in front of Northwest teachers to talk about it. That is very powerful for them."

Now as her students graduate and set up classrooms of their own, the knowledge is filtering out. Teachers

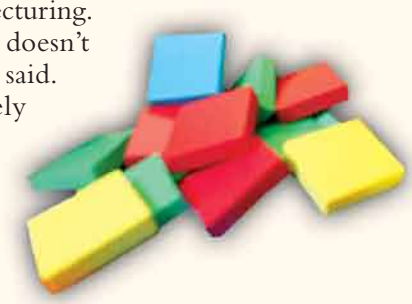
across the nation are promoting this hands-on learning and incorporating it into their curriculum.

As a result of his training with Drickey, Ryan Hawkins '04 uses manipulatives in his third-grade classroom at Grandhaven Elementary School in McMinnville. He's enthusiastic about their benefits, particularly when teaching students who are not fluent in English.

"I use them for just about every type of math," Hawkins said. "Not only are they fun to play with, even for me, but it helps kids to actually hold objects and see the solids. For example, they can think back to when I threw a ball to them and relate that to geometry."

Drickey believes variety is important to teaching, so neither physical nor virtual manipulatives can be used every day. But she hopes math teachers will move away from traditional lecturing.

"Just because you say it, doesn't mean it gets in there," she said. "Kids need to be actively involved in meaningful mathematics. That's my philosophy."



Jim Diamond in *The Student Prince*

What began as an experiment has become a passion for Jim Diamond.

Diamond, a professor of chemistry at Linfield College, can be found teaching chemistry in classrooms and labs by day. By night, he walks onto a different stage – at Linfield's Marshall Theatre, McMinnville's Gallery Theatre or Portland's Keller Auditorium. He's appeared in musicals and dramas, sung with the Portland Opera Chorus and performed with the Symphonic Choir in Portland and around the world.

His is not the usual path for today's chemist. But then, Diamond's road to science has been anything but usual. In high school he studied Greek, Latin and French. He didn't take a science class until he attended St. Joseph's College in Philadelphia, Pa., where he was captivated by physical chemistry, a field that combines physics, chemistry and math. His background in both arts and sciences – like that of his hero, the physicist and Nobel Laureate Niels Bohr, who wrote poetry, played the violin and was a mountain climber – was more common in the past than it is today.

Diamond studied piano and sang as a child. While in graduate school at Stanford, he joined the University Choir for relaxation. He continues to play the piano for pure enjoyment.

"To me, music is very personal and transforming," he said. "I would never be able to express myself in words in the way I can express myself in music."

While teaching at Bates College in Lewiston, Maine, he joined the local community chorus to get his voice in shape.

"I loved it and it made a huge difference in my ability to project my voice through the din in the laboratory," he said.

After coming to Linfield in 1991 he and his wife, Maureen McCarthy, joined the Portland Symphonic Choir, performing in a number of concerts as well as in an international choir festival in Estonia where about 35,000 singers in choirs from around the world performed.

He sang for the pure joy of it and never had any formal voice training until he approached Gwen Leonard,

professor of music, and asked to study voice with her.

"She wasn't quite sure what she was getting into," Diamond said with a laugh. "She had known me only as the chemistry guy who occasionally wore Grateful Dead T-shirts around campus."

With Leonard's encouragement, Diamond auditioned for the Portland Opera chorus and was invited to sing in the augmented chorus. He made the jump into musical theatre in 2002 when he took on the role of Sir Joseph Porter in the Gallery Theatre production of *HMS Pinafore,* where he performed his first solo role.

Then an article by a Cornell University physics professor gave Diamond yet another idea.

He was soon auditing Janet Gupton's introductory acting class and enjoyed it so much, he took intermediate and advanced acting. He was cast as Father Jack in *Dancing at Lughnasa* in the old Pioneer Theatre and found new ways to engage students in his class.

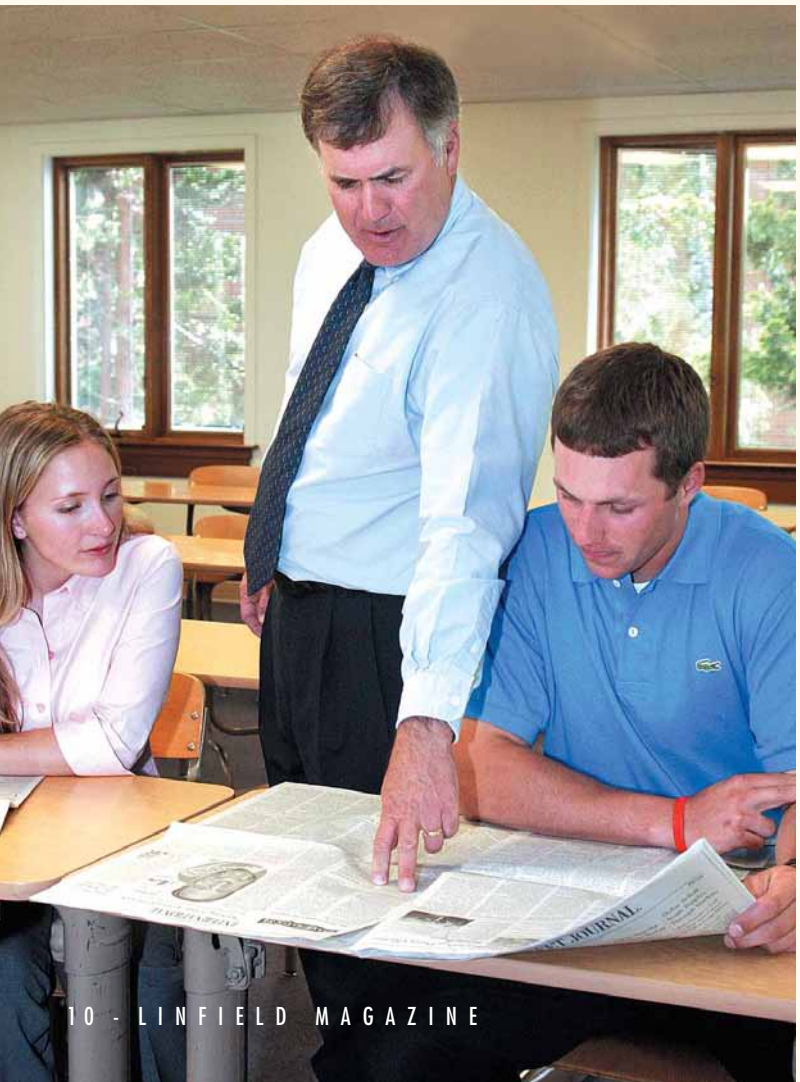
"Getting my students to respond in class is always tough," he said. "Chemistry is a hard subject and very challenging mathematically and philosophically. The theatre classes made me look at teaching differently – as a student and as a teacher. Traditionally, science is taught in a lecture setting where you are trying to get a set of concepts across. Now I have changed my style to incorporate what I have learned."

He has taken on a new challenge. He now teaches a first-year Inquiry Seminar, Chemistry and the Atmosphere. The course is designed to give non-majors an understanding of basic chemistry concepts and issues such as the formation of the ozone hole, global warming and climate change.

Without the acting classes, Diamond admits he would have been terrified of teaching an Inquiry Seminar, which emphasizes writing and speaking skills. "I'm not a writing professor," he said. "I know how to write, but my writing will never get into *The New Yorker."*

Diamond knows that Linfield students appreciate the broad interests of their professors.

"It doesn't take long before students quickly see that most faculty have a wide range of abilities," he said. "You have to be happy with all aspects of your life. If students see faculty do these types of things, maybe they will get the idea that there are some aspects to a broader education that might be helpful to them."



Scott Chambers with Gina Sipp '05 and Tommy Paterson '05

Scott Chambers spends most of his day thinking about the market.

As a Linfield College finance professor, he knows the importance of keeping up with trends in the fast-paced world of business. He feels just as strongly about bringing that cutting-edge information to his Linfield students.

"I have to be engaged in the professional aspect of what I do in order to be an effective educator," said Chambers, at Linfield since 1990. "Finance is a rapidly changing field, and it's very easy to lose sight of what's current."

Outside of Linfield, Chambers puts his investment knowledge to work in the community, both as a volunteer and professionally. He volunteers with a number of local nonprofit investment portfolios including the Willamette Valley Cancer Foundation, the McMinnville Library Foundation and the McMinnville Education Foundation. As a registered investment adviser, he also reviews portfolios for individuals, offering advice on everything from asset allocation to retirement planning.

Chambers' work with First Federal Savings and Loan offers a direct link for his students. As a member of the board of directors, he is involved in strategic planning for the institution and has a broad perspective of the bank's overall management.

"I see the whole operation," Chambers said, "and that experience comes directly into the classroom on a weekly basis as we talk about the banking sector and the

structure of banking in the United States."

Chambers' work experience provides case studies for most class discussions. He uses examples from Linfield's finances after serving as the college's interim chief financial officer in 1995. When the lesson is bank regulation, Chambers speaks from experience sitting across from regulators at the local savings and loan. When his class studies portfolio structure and dealing with large retirement distributions, Chambers relates walking clients through the process.

"It's material that can't be found in a textbook," he said. "These experiences allow me to bring that directly into the classroom, which I think students appreciate."

And they do. Tommy Paterson '05, a finance major, said class sessions are sprinkled with examples of alumni in financial careers.

"Each year, as the concepts become second nature, our class time is filled with the real world," said Paterson, who plans a career as a certified financial planner. "The purpose of all the perspectives is to be equipped to manage and prepare ourselves for a lifestyle not where we are rich, rather a lifestyle where we can be enriched by the things we do."

Former student Elizabeth Jones '02, vice president at U.S. Bank and lead banker to Linfield, said besides teaching the fundamentals of finance, Chambers also stressed the importance of interviewing and networking, skills that Jones said helped her advance professionally.

"He sees value in putting students in real-life situations to help them learn what a career in finance is really like," she said.

Chambers' outside work builds credibility with his students while helping them evaluate possible careers.

"He kept our financial education fresh with current events, while also teaching us the nuts and bolts of financial markets and portfolio management," Jones said. "He understands that students appreciate and learn more from real situations than just from book learning."

Writing and teaching go hand-in-hand for Barbara Drake.

On any given day, Drake can be found indulging her passion for both, along with a number of other wide-ranging interests including art, travel and the environment.

"I'm a professional writer, but with many other interests I'm an amateur in the true sense of the word, a lover of these things but not an expert," said Drake, Linfield College professor of English.

"When I want to learn something, like keeping bees, I get all the books I can get on it, read them, and try to put it into practice."

And her students reap the benefits. Drake, widely published and well known in the Pacific Northwest literary world, brings her enthusiasm into the classroom daily. Maintaining a rigorous schedule of readings and workshops, she finds her outside professional endeavors complement her work at Linfield.

Some months are busier than others and April, National Poetry Month, was a blur. Drake led a writing workshop, judged a poetry contest, gave a reading and read a poem, "The Owl," as invocation for the Oregon House of Representatives "to bring everyone together for an elevated moment before they started debating issues." And that was just one week.

Barbara Drake at a reading in the Austin Reading Room

Her schedule, although chaotic at times, adds depth to her teaching.

"I feel like I bring something back and forth between these activities," she said. "If I'm doing a workshop and pick up new ideas, I bring them back to my creative writing classes. If I get into another area that I'm interested in, I may offer a new class."

A member of the Linfield faculty since 1983, Drake has long recognized the importance of cross-disciplinary education. She's teamed up with a number of colleagues over the years, including Kareen Sturgeon, professor of biology, with whom she teaches environmental literature.

"It's so satisfying," Drake said. "We have different areas of expertise and we put them together, learn from each other and grow from that. It helps students make connections with different things instead of just being socked into their majors."

In 2003, Drake collaborated with Liz Obert, assistant professor of art, to teach Text, Image, Narrative and the Artist Book, for which students hand-bound their writing. The experience proved as rich for Drake, who once considered becoming an artist, as for her students. Each professor completed the other's assignments so Drake learned book binding and desktop publishing skills. This spring she offered a new course, Creative Writing and the Art of the Book, in the English Department.

Drake lives on a 20-acre farm near Yamhill, where she and her husband raise sheep and tend a small vineyard. Her 1998 book, *Peace at Heart,* reflects her deep love of the outdoors and country living.

"I've always gone out in nature for refreshment and a joyful feeling," she said. "So naturally, when I moved to the country I started writing about it. Whatever I'm doing, at work or at home, it's possible material for my writing."

Another of Drake's interests, international travel, is the focus of her most recent project. Her book, nearing completion, chronicles more than four decades of changes in the world from her perspective, first as a student and then as a professor leading Linfield study abroad courses to Europe.

For Drake, inspiration is all around. "I enjoy all these things I do and want to share them with my students," she said.

– Stories by Laura Davis and Mardi Mileham