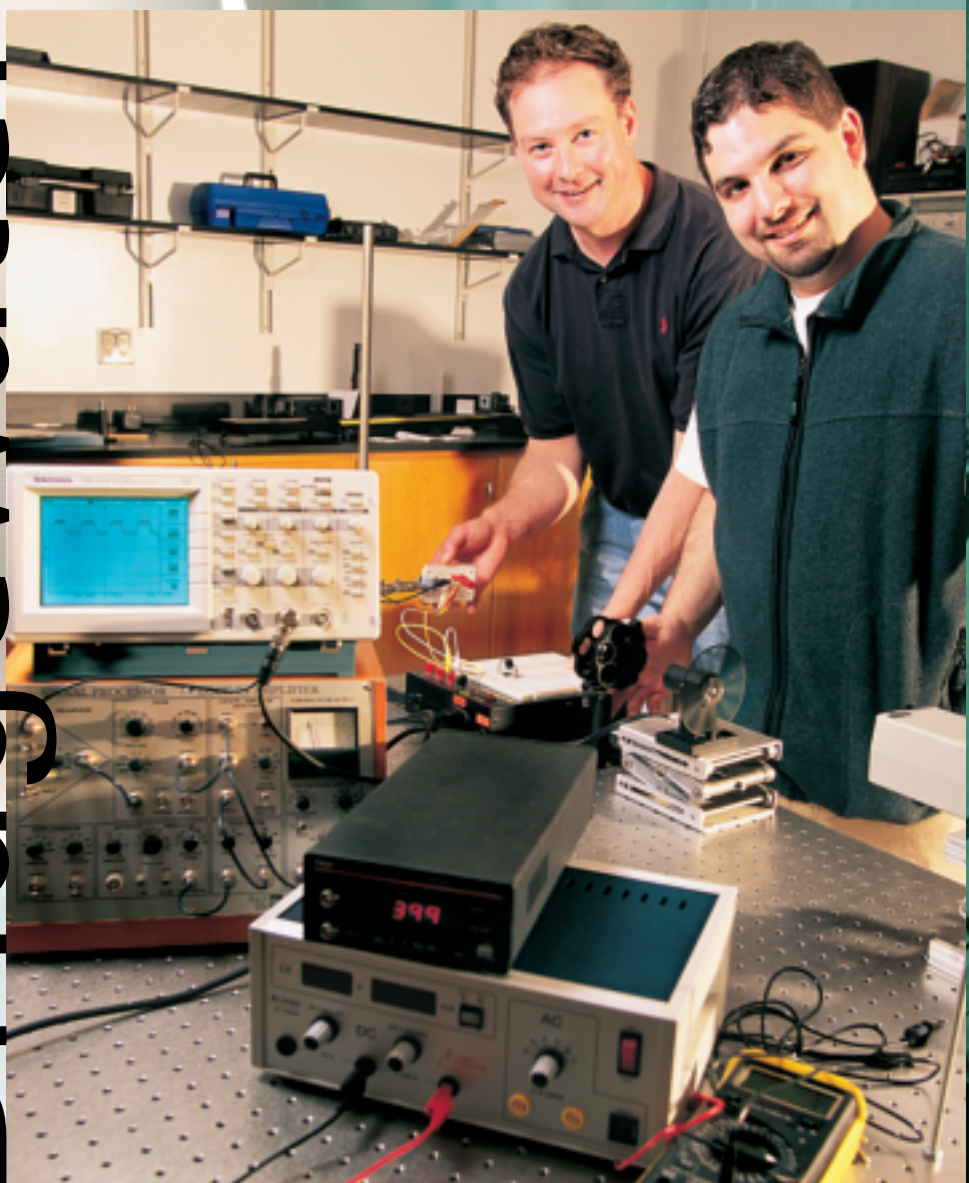
Volume 14
No. 3

# Bridgewater



A Publication for Alumni, Parents and Friends of Bridgewater State College

Dr. Edward Deveney, assistant professor of physics, with student Brian Keith in the college's laser lab. BSC is responding to the need for qualified math and science teachers through creative approaches that help future educators master their core subjects along with classroom management skills. Brian, a Weymouth resident, is majoring in math and physics and minoring in education. He intends to teach high school physics. Story begins on page 3.

Summer 2004

## CONGRATULATIONS

# *To Bridgewater State College Students and Faculty Mentors Participating in the Adrian Tinsley Program for Undergraduate Research*

More than 50 students in the Adrian Tinsley Program for Undergraduate Research made presentations at the Fourth Annual Research Symposium. Staged throughout the John Joseph Moakley Center for Technological Applications on April 30, the undergraduate research program is made possible by annual contributions from the Bridgewater State College Foundation, the Office of the President, the Joseph and Frances '49 Heney Student Research Fund and the Class of 1952 Fund. Founded in 2000 by Dr. Andrew Harris, Department of History, and Dr. Edward Brush, Department of Chemical Sciences, the program encourages student and faculty collaboration on far-reaching academic projects. Student research presentations for research completed in 2003-2004 were:

**Amanda Allen** – Sociology; *The Good, the Bad, and the Proud to be Ugly: Radical Feminism as a Changing Social Movement;* Mentor: Dr. Patricia Fanning

**Melissa Amistadi** – Biology; *The Effect of Diosgenin on C2C12 Cells;* Mentor: Dr. Merideth Krevosky

**Brian Anderson** – Environmental Chemistry; *Levels of Copper and Iron Contaminants in the Wading River, Mansfield, MA;* Mentor: Dr. Tammy De Ramos-King

**Sarah Arruda** – Mathematics; *Vision: A Mathematical Analysis;* Mentor: Dr. Uma Shama

**Rosemary Barrett** – Biology; *A Cis Before Dying;* Mentors: Dr. Merideth Krevosky and Dr. Jeffrey Bowe

**Evan Barry** – Biology, and Audrey Vilgrain; *The Role of Prolactin and Cortisol In Osmoregulation of the Golden Shiner (Notemigonus Crysoleucas);* Mentor: Dr. Doraswami Shanmugasundaram

**Michele Bauer** – Exercise Science; *Exercise for the Non-ambulatory and Seriously Ill;* Mentor: Dr. Ellyn Robinson

**Aaron Botelho** – History; *The Scourge of God: The Reformed Faith in England 1533 – 1556;* Mentor: Dr. Andrew Harris

**Taryn Brady** – Psychology; *The Effects of Attractiveness, Gender, and Risk on Helping Behavior;* Mentor: Dr. Michael Murtagh

**Debra Brandzen** – Art; *New Works;* Mentors: Dr. Roger Dunn and Professor William Kendall

**Nancy Byrne** – Special Education, Elementary Education, and English; *'She'd never felt power like this before.' The Reversal of the Captivity Narrative in Roddy Doyle's The Snapper;* Mentor: Dr. Garland Kimmer

**Lauren Carter** – English; *Where My Father Was;* Mentor: Dr. Lee Torda

**Janessa O. Carvalho** – Psychology; *Neuropsychological Profiles Observed in Mitochondrial Disorders;* Mentor: Dr. Sandra Neargarder

**Erin M. Collupy** – Environmental Biology; *Tessellated Darter, Etheostoma olmstedi, as a Stress Indicator in Southeastern Massachusetts Streams;* Mentor: Dr. Kevin Curry

**John Connolly** – English; *White Eyes;* Mentor: Dr. Lee Torda

**Eric Curry** – Chemistry, and Jordan Bethoney; *Heavy Metal Pollution in Sediment of the Salisbury Plain River Lower Drainage Basin;* Mentor: Dr. Tammy De Ramos-King

**Jennifer L. Dawson**; *Are You a Dublin Girl? Joyce's Women as Products of Their Culture;* Mentor: Dr. Garland Kimmer

**Karen L. DeBalsi** – Chemistry and Biology; *Synthesis, Purification, and Characterization of Dialkylester Glutathione Conjugates with 3-Methyleneoxindole as Potential Therapeutic Agents;* Mentor: Dr. Edward J. Brush

**Glen dePontbriand** – English; *Evolution of the Self in American Literature;* Mentor: Dr. Ann Brunjes

**Kelly Engdahl** – History; *Erecting National Feelings: The Symbolic Placement of Monuments Throughout Florence During the Risorgimento;* Mentor: Dr. Luci Fortunato-DeLisle

**Ammie Farrar** – Anthropology; *Uses of Hematite in the Late Archaic;* Mentor: Dr. Curtiss Hoffman

**Charles Fortier II** – Mathematics; *The Unhappy Life of Galois and the Important Addition of Galois's Theory;* Mentor: Dr. Ward Heilman

**Lisa Garcia** – Psychology; *Depression and Stress in the Undergraduate, Graduate, Non-traditional Students, and College-age Non-students;* Mentor: Dr. Michael Murtagh

**Blayne Gatenby** – Chemistry; *Computation of Crystal Field Splitting of Mn2+ in Alkali Halide Crystals;* Mentor: Dr. Chifuru Noda

**Amanda E. Gross** – Environmental Geoscience; *Field Validation of Grain Size Determination of Massachusetts Beaches Using Brightness Measurements From LANDSAT Thematic Mapper Data;* Mentor: Dr. Richard Enright

**Tiffini Hamilton** – Chemistry; *An Investigation of Anthropogenic Impact on Heavy Metal Contamination of the Town River in Bridgewater, Massachusetts;* Mentor: Dr. Tammy De Ramos-King

**Christopher B. Haslam** – Biology; *Chronological Patterns of Emergence of Dragonflies in Carver Pond, Bridgewater, MA;* Mentor: Dr. Kevin Curry

**James A. Hebda** – Chemistry; *Development of a Fluorescence Based Assay for 1, 4, 5-Inositol Triphosphate;* Mentor: Dr. Frank Gorga

**Jennifer Hickney** – English; *George Eliot's use of Chaucerian Epigraphs for Thematic Development in Middlemarch;* Mentor: Dr. Kathleen Vejvoda

**Teresa Hunter** – English; *Under the Sheets: The Significance Behind the Sexual Feminization of Leopold Bloom and Stephen Dedalus;* Mentor: Dr. Garland Kimmer

**Edward Kelliher** – Environmental Biology; *Investigating Fluctuating Asymmetry of the Larval Damselfly, Calopteryx maculata (Odonata: Calopterigidae);* Mentor: Dr. Kevin D. Curry

**Sheila Kesse, Merideth Miller, Darlene O'Neill, Nicole Vayo, Kristin Letendre, Katie Crisman, Eileen Sullivan, Melissa Gilmore, Elizabeth Lamb, Michelle Reynolds, Nga Vuong, Maura Cacciatore, Erin Benway, Megan Hickey, Colleen Soroka, Courtney Woolard, Heather Desmond, Kelly Cunningham, Mary Beth Pettine, Ashley Timmers, Wendy Cyprien, Suzette Toussaint, Jamie Babin**; *Every Step Counts;* Mentor: Dr. Lydia Burak

**Laura Kinnin** – Chemistry/Geology; *Fluorescence Spectra of Uranyl Compounds;* Mentor: Dr. Chifuru Noda

**Monica M. Laronda** - Biology, and Dr. Merideth Krevosky; *Investigation of a Potential Anti-cancer Agent: 3-methyleneoxindole;* Mentor: Dr. Jeffery Bowen

**Katie Lewis** – History; *Prisoners of the Civil War: The Story of Six Women Prisoners;* Mentor: Dr. Thomas Turner

**Sasha Link** – English; *The Link to Finding Myself;* Mentor: Dr. Lee Torda

**Jeffrey D. Marganian** – Theatre Arts; *An Examination of Love in Bertolt Brecht's Plays of Exile, 1933-1947;* Mentor: Dr. Suzanne Ramczyk

**Joel Milliken** – Chemistry/Geology; *Hourglass Inclusions in Potassium Sulfate Crystals / Fluorescence in Short and Long Wave UV Light;* Mentor: Dr. Chifuru Noda

**Megan Mulligan** – Sociology; *Fathers, Be Good to Your Daughters;* Mentor: Dr. Lee Torda

**Wendi Field Murray** – Anthropology; *Investigation of Stone Structures in Eastern Massachusetts;* Mentor: Dr. Curtiss Hoffman

**Stacy Nistendirk** – Early Childhood Education and English; *A Tidy Spot;* Mentor: Dr. Lee Torda

**Karyn O'Connell** – Biology; *Death by Etoposide;* Mentor: Dr. Merideth Krevosky

**Geoffrey Oldmixon** – English; *Inside The Comment: a Quasi-Ethnography;* Mentor: Dr. Anne Doyle

**Yoshitaka Ono** – Economics; *Transit Accessibility in Boston;* Mentor: Dr. Robert Hellstrom

**Jeremy Perry** and **Jesse Miller** – Chemistry; *Green Chemistry Synthesis of 3-methyleneoxindole from Indoleacetic Acid;* Mentor: Dr. Edward Brush

**Patricia Portanova** – English; *Joyce's Women: An Unattainable Ideal of Irish Nationality;* Mentor: Dr. Garland Kimmer

**Travis Pribusauskas** – Chemistry; *Synthesis of a Fully Solvated Molybdenyl Complex with the [Mo2(-O)2O2]4+ Core;* Mentor: Dr. Steven C. Haefner

**Johannah Price** – Public Archeology and History; *First, be Sexy! Cinema, Femininity, and the Young American Woman;* Mentor: Dr. Leora Lev

**Elizabeth Robbins** -- Elementary Education and English; *Mother Superior versus Mother Ireland: The Paradoxical Role of Nuns in Twentieth Century Irish Fiction;* Mentor: Dr. Kathleen Vejvoda

**Jaime Rochefort** – Biology; *P53: A Life or Death Situation;* Mentor: Dr. Merideth Krevosky

**Nicholas Q. Rofe** – Geology; *Geologic Mapping of Volcanic Rocks in the Blacktail Mountains, Montana;* Mentor: Dr. Michael Krol

**Tricia Shaw-Nelson** – Chemistry; *Synthesis of S-glutathionyl-3-bromooxindole Acetic Acid as a Potential Inhibitor of Glyoxalase II;* Mentor: Dr. Edward Brush

**Shun Terasawa** – Biology; *Gene Control of Cell Division in E.coli;* Mentor: Dr. Michael J. Carson

**Shalena Weninger** – English; *The Fourth Wall;* Mentor: Dr. Lee Torda

**Nicole Williams** – English; *It's Time To Crack Down. A Look at Teenage Labor Laws;* Mentor: Dr. Lee Torda

# Bridgewater

*Bridgewater* aims to keep alumni, faculty, students and their families, staff and friends of Bridgewater State College informed about the college community and its impact on the region. The tri-annual college magazine is written, designed and edited with the needs of its varied audiences at heart and in mind.

**On the cover:** Brian Keith, a third-year BSC student from Weymouth, and Dr. Edward Deveney, assistant professor of physics, experiment with a set of instruments in the college's laser lab designed to amplify laser signals. Brian plans to teach high school physics after graduation. BSC offers a number of teacher training programs, including an Accelerated Post Baccalaureate, to meet the region's need for qualified math and science teachers. See story pages 3-8.


**Bridgewater Magazine staff:**

**Editor:** Marie C. Murphy, '86, assistant director of public affairs
**Editorial Board:** Eva T. Gaffney, G'01, director of public affairs
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**Contributors:** Eva Gaffney, G'01; Candace Maguire; Brian Stuart; David Wilson, '71; Bryan Baldwin; Linda Balzotti; Colleen Oliva; Karen White
**Photography:** Kindra Clineff; Tom Croke/VISUAL image; Brian Stuart; David Wilson, '71;
**Illustration:** Dana Barros
**Design:** Philip McCormick, *Design works.*



**Correspondence:** Address all mail to
Editor, *Bridgewater*
c/o Public Affairs
Bridgewater State College
Bridgewater, MA 02325
Phone 508.531.1335
E-mail: mmurphy@bridgew.edu;
E-mail class notes to:
cmaguire@bridgew.edu.

Issues of *Bridgewater* are posted on the college's Web site at **www.bridgew.edu.**

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# President's Message

## Dear friends,

The conclusion of the spring semester brings with it time to reflect back upon the strides we have made over the past year. By any measure, the past 12 months were filled with a number of important milestones – milestones we simply would not have reached without your ongoing support and enthusiasm for the institution. These include:

- The value of the BSC endowment growing to $11 million – the largest endowment of any state college in Massachusetts;
- More than $1.7 million of direct support from the BSC Foundation and the Alumni Association being channeled into faculty and student endeavors over the past three years;
- The completion of the first comprehensive review and modernization of the undergraduate curriculum in nearly two decades;
- The launch of *The Bridge*, a student journal of fine art and creative writing, which has already been lauded for its exceptional level of quality;
- And the awarding of the first-ever Bridgewater State College Presidential Fellowship (an honor which carries with it a full year's worth of release time and a research budget of $10,000) to a member of our faculty.

Though we may be taking tremendous steps forward, our historic commitment to the commonwealth and to the people of Southeastern Massachusetts remains as strong as ever. As you'll read about in the pages to follow, our institution has played a leading role in tackling a critical regional and statewide problem – the shortage of qualified math and science teachers.

Through the college's innovative Accelerated Post Baccalaureate (APB) program, dozens of mid-career, high-tech professionals are successfully making the transition to the teaching profession and are transforming their experiences in business and industry into curricula meeting the needs of the classroom. At the same time, and thanks in no small part to a growing cooperative spirit between the School of Arts and Sciences and the School of Education and Allied Studies, more and more traditional BSC students are becoming attracted to the possibilities of teaching math and science at the primary and secondary levels.

These accomplishments represent just a small sample of the exciting things taking place at Bridgewater State College, but a very clear indication of where we are headed. As always, I invite you to be a part — or in many cases, to continue to be a part — of the college's ongoing journey to excellence.

Sincerely,

Dana Mohler-Faria
President

# **BSC Responds** to Call for **Math and Science Teachers,** Fills Region's Classrooms and Supports Educators in the Field

*By Brian Stuart*

Michael McCarthy had 20-plus years of high-tech industry experience under his belt and was starting to feel restless. As a purchasing and materials manager at a Boston firm, the 45-year-old Attleboro resident spent his days crunching numbers and thinking that someday he'd like to ply his math skills in the classroom.

The pull toward a career in education grew each time his wife Virginia, a teacher at Thatcher Elementary School in Attleboro, came home with stories about her students. "She had been teaching since the 1970s so I had an inside track into the profession," Mr. McCarthy said. "I didn't feel that my current job was particularly rewarding. I like kids, and I had always believed teaching was a noble calling."

He learned from one of his wife's coworkers about Bridgewater State College's fast-track-to-teaching program, formally known as the Accelerated Pathways to Teaching (APT), and decided to take the plunge. After a semester of course work followed by a period of mentored instruction, Mr. McCarthy graduated in December 2003 with an initial teacher's license and a job teaching eighth grade math and science at Wamsutta Middle School in Attleboro.

The college's Accelerated Post Baccalaureate (APB) program was started in the spring of 2002 to meet a critical need for math and science teachers across the state. It was marketed to professionals in technical fields and designed for working adults who wanted to make a mid-career transition into education. The intent was to add teaching skills to their industry-based knowledge so they would be prepared for the classroom as quickly as possible.

"These are people who know their subjects and want to teach, but they don't want to spend years of retraining to get their initial license," said Dr. Lynne Yeamans, assistant professor and coordinator of BSC's secondary education program. "They are engineers, computer scientists, people working in laboratories and professionals in other fields. But they lack pedagogical skills in areas such as preparing lesson plans, setting objectives and measuring student performance."

## An acute need

The APB program was created in response to a call for more and better-qualified math and science teachers in Massachusetts, though the curriculum has since been expanded to include course work for teaching the humanities.

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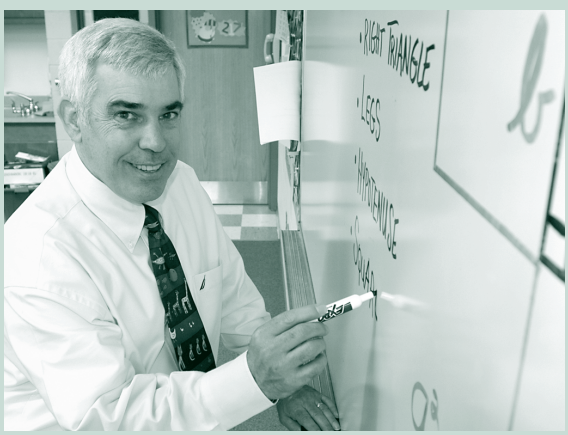


**Michael McCarthy**

*Eighth grade math and science teacher, Wamsutta Middle School, Attleboro*
*Graduated from APB program, December 2003*

Mr. McCarthy considered switching careers to education after years of hearing his wife, Virginia, describe her job teaching elementary school. After learning about Bridgewater State College's Accelerated Post Baccalaureate program, he decided it was time to leave his high-tech job and become a math teacher.

Today he's glad he made the choice. "People at my school think I'm so enthusiastic because I'm a first-year teacher," the Attleboro resident said. "But it's more than that. I love doing this, and I love the age group."

Mr. McCarthy said he appreciated the feedback he got from his teaching coach. "He gave me confidence and an insider's view into the profession," he said. "That was important because I knew that I would be dealing with middle school students, and I needed guidance from a classroom management perspective."

The camaraderie of the program was important too, he said. Mr. McCarthy still keeps in touch with his classmates through a Yahoo! users group that allows him to post and respond to messages. "We didn't just disband after we graduated," he said. "We established a good support group."

**Erin Gordon**

*Science teacher, Fairhaven High School*
*Graduated from APB program, December 2003*

Ms. Gordon had been teaching for two years when she enrolled in the APB program as a quick route to certification. "I had my provisional certification and was looking for an efficient way to get my initial license," said Ms. Gordon, who teaches marine biology, oceanography and environmental science at Fairhaven High School.

"I think that maybe I got more out of the APB program than people coming straight out of industry because I had already seen how teaching techniques and ideas had applied in the classroom," she said.

Ms. Gordon said she enjoys guiding her students through hands-on environmental projects. She said the portion of the APB curriculum on teaching methodology has helped her become more effective at communicating the material.


Training in student character development and behavior modeling has also helped, she said. "Every day at school you're dealt a different hand from the deck and no matter what you get, you've still got to find a way to win the game."

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Math and science were determined to be acute-need areas both statewide and nationally, based on reported shortages of qualified instructors and U.S. students' lagging performance on international standardized tests. The National Research Council and other education advisory groups laid much of the blame on teachers at the middle school and high school levels who were teaching math and science without being certified in either subject.

At the same time, questions were raised about the quality of teacher training programs at higher education institutions across the nation. Programs at Massachusetts public colleges faced particular criticism after more than half of the state's teacher applicants failed a new reading and writing proficiency test in the spring of 1998. And critics did not mince words.

Six years later, the accusations still sting for many in the profession, including Ms. Mary Ann McKinnon, director of accreditation, licensure and field placement for BSC's School of Education and Allied Studies. "I remember headlines describing how teachers scored a 'D' and state colleges had failed their mission," she said. "People began to scrutinize education programs at public colleges, not just from the perspective of ensuring teacher competency, but to find out how these schools were addressing the particular shortage of math and science instructors."

Adding to the sense of urgency was the passage of the federal No Child Left Behind Act of 2001. The law requires teachers of academic subjects to be "highly qualified" by the end of the 2005-2006 school year. That standard was defined as demonstrated competence in one's core teaching area. Thus in two years, math and science teachers must have a degree in the subject they teach, possess credits equivalent to an undergraduate major or pass a state-developed competency test in their specialty.

The result has been a scramble by local school districts to make sure their teachers meet the standard. Because math and science teachers are in short supply, the requirement primarily affects school systems that have resorted to filling vacancies with individuals who majored in education but lack technical training in their subject.

"We're getting more people calling us who have been teaching outside their certification area, and suddenly they've been tapped on the shoulder by their principal and told they need to get licensed in their subject," Ms. McKinnon said. To ensure students in the APB curriculum for math and science teachers are proficient in their subjects, applicants must pass a content knowledge test before they are admitted to the program.

Erin Gordon, a 2003 graduate of the APB program, said she had been teaching science for two years at Fairhaven High School with a preliminary license. She decided to enroll in the accelerated program at BSC as a quick route to certification. Having received her bachelor's degree in marine biology, Ms. Gordon had no problem passing her subject-specific test before entering the program. "Initially, I wasn't sure if I wanted a career in science," she said. "I decided to give teaching a try, and I found Bridgewater State College's program to be the most efficient."

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## Fast-track training joins traditional programs

BSC's accelerated path to teaching program strengthened an already thriving teacher education program on campus. The college today offers 19 undergraduate and post baccalaureate programs leading to initial teacher certification. Fifteen graduate-level programs lead to professional level licensure. At any time, about 1,500 students are enrolled in teacher training programs at the college.

"We believe that our teacher training programs are something to be proud of," said Dr. Anna Bradfield, dean of BSC's School of Education and Allied Studies. "We offer a lot of support to our education faculty. It's not an inexpensive undertaking, but it's so important to our mission at the college that we need to be able to say that we're the very best."

Dr. Dana Mohler-Faria, president of BSC, said the college has adapted to the dynamics of teacher supply and demand, particularly as math and science have emerged as critical-need areas. "Bridgewater State College is the oldest continuously operating teacher preparation institution in the United States; it is the largest producer of new teachers for the commonwealth; and we are committed to prepare not only more teachers but more high-quality teachers to help meet a projected need to fill 42,000 vacancies across the state through 2009," he said.

The college makes a special effort to strike a balance between grounding students in their teaching subjects and making sure they can communicate the material once they're in front of their class. Undergraduates planning to teach math or science at the middle school and high school levels are required to major in the subject and minor in education. This ensures they are comfortable both in their content specialty and classroom management, Dr. Bradfield said.

At BSC, even prospective elementary school teachers who major in education are exposed to higher level math and science concepts, Dr. Bradfield said. "We recognize the need to improve these skills as far down as the elementary level because that's where an important cultural shift needs to take place so that teachers, from the early grades on, are comfortable with quantitative skills and the scientific method," she said.

Brian Keith, a third-year BSC student from Weymouth, decided he wanted to teach math during his junior year of high school. "I had a really good trigonometry and calculus teacher who made the subject very relevant," he said.

Mr. Keith entered BSC intending to major in math and minor in secondary education. After taking two physics classes, he decided to add physics as a second major and pursue a career teaching high school physics. He said his Introduction to Teaching class helped him see how to translate his science knowledge into practical lessons that would engage his students.

The class required 40 hours of classroom observation which he completed at Weymouth High School, and the experience brought further focus to his teaching plans. Brian said he now wants to help low-performing students master basic physics. "When an idea clicks with someone, I feel like I really did something valuable," he said. "I want to show that physics can be fun."

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**Mr. Keith (right) with Dr. Edward Deveney, assistant professor of physics**

*Third-year BSC student*
*Major: math and physics; Minor: secondary education*

Mr. Keith was a junior at Weymouth High School, sitting in his trigonometry and calculus class, when he decided he wanted to follow in his teacher's footsteps.

"This guy was a really good teacher because he described the relevance of the subject before he got into the content," Mr. Keith said. "I remember that he had been in the Army and he talked about the calculations required for dropping packages out of planes."

Mr. Keith enrolled at BSC as math major with a minor in secondary education. After taking a required physics class, however, he decided to add physics as a second major and select that subject for teaching.

He is already honing his skills by tutoring in the math and physics lab and giving private instruction. "I like it when an idea clicks and I can help someone understand a difficult concept," Mr. Keith said. "I try to give students extra information to show how a problem is relevant instead of just giving them the path to the answer."

Mr. Keith said he would eventually like to teach non-honors courses at the high school level, boosting students' interest and performance by showing how "math and physics are fun."

*(From page 5)*

## Guiding top students toward education

Dr. Bradfield said BSC's School of Education and Allied Studies is developing a program to identify high school students like Brian who are inclined to pursue teaching careers, particularly in areas of short supply, such as math and science. Advisers and instructors on campus could encourage technically proficient students to gravitate toward education and then begin mentoring them as college freshmen to help them succeed, she said.

A new scholarship for education majors intending to teach math or science may provide additional incentive. The scholarship was established by the Class of 1943 at its 60th reunion last summer. Joseph O'Donnell, a member of the class, had been a school superintendent in Connecticut, and saw firsthand how difficult it was to hire enough math and science teachers.

Math and science faculty already watch for undergraduates who show combined proficiency in their major with an aptitude for teaching. Richard Quindley, associate professor and chairperson of BSC's mathematics and computer science department, said he has encouraged some of the more effective tutors in the math lab to think about a career in education. "I ask them if they have considered teaching, and I let them know of the need in the field and the number of job openings out there," Professor Quindley said. He knows of several students who heeded his advice.

Cooperation between the School of Arts and Sciences and the School of Education and Allied Studies is essential if the college is to graduate teachers who are skilled in both their classroom subjects and educational theory, said Dr. Howard London, dean of the School of Arts and Sciences. "To do a good job teaching pedagogy, you need to work with faculty who are experts in their math and science content areas. We are mutually dependent on one another," he said.

To that end, Dr. London and Dr. Bradfield have launched a new forum to enhance collaboration between the two schools. Beginning this fall, they will coordinate meetings to engage department chairpersons in the School of Arts and Sciences with education chairpersons to discuss critical issues in teacher preparation. "The reality is that in Massachusetts we're known as a teacher-education institution, so we have an obligation to produce the best teachers we can, both in terms of meeting certification standards and making sure these individuals are effective in the classroom," Dr. London said.

Kathleen Gonsalves, a BSC student majoring in earth science with a dual minor in secondary education and physics, said she has been impressed with how her course work has integrated science training with teacher preparation. "The education courses I've taken so far don't sugarcoat what it's going to be like in the classroom," she said. "They make you do a lot of classroom observation."

At the same time, Ms. Gonsalves is digging deeper into the technical facets of her earth science major through a summer project funded by BSC's Adrian Tinsley Program for Undergraduate Research. She will determine whether magnetic field fluctuations caused by groundwater shifts can be used to predict earthquakes. "I really like trying to understand processes and why the earth does what it's doing," she said. "I want to teach these things to high school students and stimulate their interest."

## Supporting teachers in the classroom

Preparing math and science teachers to enter the field is only one part of the equation. Once they are in the classroom, newly minted teachers need both moral support and technical training to retain their enthusiasm and stay relevant in a changing field, BSC administrators said.

"The true test of whether our APB and graduate programs are effective will be if those who made the transition into teaching stick with it," said Dr. Edward Minnock, dean of BSC's Office of Graduate and Continuing Education. "We're in touch with school superintendents, and one of the things they don't want is high turnover. It takes a lot of effort and energy to bring a new teacher on board and no one wants this to be a revolving door."

Starting this fall, Dr. Minnock said, the office of graduate and continuing education will begin a new outreach

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### BRIDGEWATER STATE COLLEGE'S PREPARATION OF MATH AND SCIENCE TEACHERS

*Numbers of students who graduated with course work preparing them to teach math or science*

| Degree category | 2000-2001 | 2001-2002 | 2002-2003 | 2003-2004 | Four-Year Total |
|---|---|---|---|---|---|
| Undergraduate | 5 | 1 | 3 | 3 | 12 |
| Graduate | 1 | 0 | 1 | 0 | 2 |
| Post Baccalaureate | 2 | 2 | 3 | 4 | 11 |
| Accelerated Post Baccalaureate | - | - | 47* | 61** | 108 |

* Reflects first cohort of graduates from Accelerated Post Baccalaureate program

** Includes 27 students whose verification of eligibility for initial licensure was in process in May 2004.

**Kathleen Gonsalves**
*Third-year BSC student*
*Major: earth science*
*Minor: physics and secondary education*

For as long as she can remember, Kathleen Gonsalves has been curious about geological processes and how mechanical items work. She volunteered as a den leader for her son's Cub Scout troop, "got a charge out of it" and decided to pursue a career in earth science education, starting from scratch with her bachelor's degree.

Now in her third year of her preparatory program, Ms. Gonsalves is eager to spark high school students' interest in science. This summer she will pursue research in earthquake prediction through BSC's Adrian Tinsley Program for Undergraduate Research. She expects to graduate in 2005.

Ms. Gonsalves spends her days juggling the responsibilities of being a full-time student and mother of two. "I'm often running from class to do laundry and then carrying my book bag to my sons' baseball games," she said.

But Ms. Gonsalves believes a teaching career will be worth it. "It's a lot of work and not a lot of money," she said. "So you've got to love kids and want to teach kids because you're never going to be a millionaire."

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to district superintendents, curriculum coordinators and regional job placement agencies. The goal is to help them assess their needs and make sure the college's course work prepares teachers to meet those needs, he said.

The APB program seeks to build a peer support system among class members to ease their entry into the classroom and help them continue learning from each other. Some cohorts maintain contact through e-mail and Internet bulletin boards. Mr. McCarthy said he keeps in touch with his fellow graduates though a Yahoo! user group that allows teachers to post questions and comments to each other.

BSC also helps teachers in the field stay current and achieve professional certification in math and science through district-based training programs and summer institutes. These are often taught by college faculty from both the School of Education and Allied Studies and the School of Arts and Sciences.

Ms. Jane Souza, director of off-campus programs for BSC's Office of Graduate and Continuing Education, said she often fields calls from districts with specific needs. For example, a school administrator or teacher may call and say a particular group of classes didn't perform well on their MCAS math section. Ms. Souza responds by joining with BSC faculty to develop a curriculum around that specific need.

She has worked with Taunton public schools to create a proposal for a district-based professional licensure program. If it is approved by the state Department of Education, a compressed schedule of courses would be offered within the district to broaden teachers' content knowledge in math and science, meet requirements for professional licensure and allow teachers to earn credits toward a master's degree at BSC.

A map on Ms. Souza's wall is scattered with pins marking locations where the college is partnering with districts to support teacher training. Locations extend from south central Massachusetts north to Quincy and east across Cape Cod. "We already offer these schools math and science courses as the need requires," she said. "But full-fledged, district-based certification is a new area where we have taken the lead."

Dr. Dale Hanley, assistant superintendent of Taunton public schools, said a district-based path to certification would be a cutting-edge solution to help teachers gain the content area training required to obtain their professional stage license. The immediate need is to help middle school math and science teachers move from initial to professional licensure, Dr. Hanley said. "This would provide the training in less time and in a more focused format."

## Training funds sought

To further enhance math and science teacher training, BSC actively seeks outside funding though federal, state and private sources. The money helps support both district-based programs and summer content institutes on campus.

This spring, three BSC faculty members received $112,000 in federal funds channeled through the Massachusetts Board of Higher Education to provide content courses to local math and science teachers. The training will involve 150 teachers from Brockton, Randolph and Fall River in

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**Susan Hennigan**

*Biology teacher, New Bedford High School*
*Graduated from APB program, December 2003*

Susan Hennigan had been laid off from a high-pressure sales job and took a secretarial position at East Bridgewater High School for income and a change of pace. "I found out there that I really loved the school environment and that I wanted to sink my teeth into it more," she said.

A coworker told her about teaching training for mid-career professionals at Bridgewater State College and she enrolled in the Accelerated Post Baccalaureate program. The compressed curriculum was the primary attraction, she said, "Because I couldn't afford to be out of the workforce for too long."

Ms. Hennigan capitalized on her undergraduate biology degree and tackled the course work to obtain her initial license to teach secondary education. She said she was particularly impressed with professors who helped her navigate state regulations and learn to assess student performance. She also received personal instruction from a teaching coach.

"I love New Bedford High School," she said. "Because the school is so large, I get a lot of support from other teachers. I took a pay cut but this has been a giant leap forward in my quality of life."

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programs focused on the principles of science, watershed conservation and math instruction for English language learners.

Research shows that high-quality teaching is the most powerful predictor of student achievement, said Dr. John Jahoda, BSC professor of biological science, who designed one of the funded programs. His "Brockton Science Enhancement Project," which started in January, offers content modules in biological science concepts for elementary and middle school teachers in the district.

Facilitated by BSC's Office of Grants and Sponsored Projects, a planning team from institutions and organizations across Southeastern Massachusetts and the Cape and Islands worked together to submit a proposal this spring to the Massachusetts Mathematics, Science, Technology and Engineering Grant Fund that will help support similar programs. This pool of $2.5 million, commonly called the Pipeline Fund, was established in part to increase the number of qualified math and science teachers in the commonwealth, said Dr. Frances Jeffries, BSC director of grants and sponsored projects.

Dr. Jeffries said the college has been particularly successful in attracting funds for summer content institutes taught by faculty from the School of Arts and Sciences. An emerging priority, she said, is preparing teachers to convey math and science topics to English language learners. One of this spring's Board of Higher Education grants was awarded to Dr. Lidia Silveira, BSC professor of special education and communication disorders, for course work to help teachers in Brockton and Randolph increase math and science proficiency among students for whom English is not their native language.

## Teacher training an investment in region

"These initiatives supporting teachers in the field are just as important as our preparatory programs for education students," said President Mohler-Faria. "We can't run the risk of making an enormous investment in new teachers, only to abandon them after they've completed the required course work."

President Mohler-Faria said BSC is committed to constantly evaluating its portfolio of teacher education and support programs. "We need to stay current and effective in addressing needs as they arise, such as in math and science," he said. "Committing resources to support the individuals who teach our young people is an important investment in the social and economic health of our region."

Mr. McCarthy said he is grateful BSC offered a program for non-traditional teacher candidates like himself. Otherwise, he might not have switched careers from high technology to education. It is a decision, he said, that is validated every time he enters his classroom.

"People at my school think I'm enthusiastic because I'm a first-year teacher," he said. "But it's more than that. I love doing this." ■