

stemthegap®



EDUCATION MOVEMENT

A New Way to See STEM

This publication recaps some of Dow's success promoting science, technology, engineering and math (STEM) education in the first half of 2014. That success grows from an understanding that sustained prosperity for the company, the communities where it does business and society as a whole depends on people with the right skills.

The company's STEM education initiatives are built on four pillars: Teach, Learn, Work, Advocate. Dow people believe that empowering teachers, motivating students, developing careers and collaborating with communities are the keys to a STEM-strong future. These pages tell that story within the framework of those four pillars.

Here are some of the stories you'll find inside:

Teach



Teachers Learn From Smithsonian Experience

WASHINGTON, D.C.: No one does science quite like the Smithsonian Institution, so the Smithsonian Science Education Academies for Teachers is a unique way to raise the quality of education for many students. **PAGE 2**



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Partnership Helping Discover Future Stars

AUSTRALIA: Dow AgroSciences is helping to deliver hands-on opportunities for bright Aussie students to use their skills in a real-world work setting. **PAGE 13**



Advocate



Andrew Liveris Signs Historic STEM Pact

MICHIGAN: Dow has joined forces with 25 other leading American companies in committing to a new era of support for STEM literacy. **PAGE 15**

Check out the Back Page for a collection of resources that can help teachers, students, parents, workers and anyone else who has an interest in improving STEM education.

First Half of 2014

Brings Major STEM Milestones

Dow's STEM Education Mission:

To build the workforce of tomorrow by empowering teachers, motivating students, developing careers, and collaborating with communities, to transform STEM education into a driver for innovation, manufacturing and economic prosperity.

The first six months of 2014 were a groundbreaking time for Dow's efforts to promote science, technology, engineering and math (STEM), highlighted by the launch of the STEMtheGAP™ Education Movement.

STEMtheGAP is intended to be an ongoing dialogue involving people committed to improving STEM education. It features communication, high-profile events, grant contributions and other components. STEMtheGAP was unveiled at the National Science Teachers Association (NSTA) National Conference in Boston, Mass., in April.

The first major STEMtheGAP activity was the Dow Teacher Challenge, which invited educators at the NSTA conference and around the country to discuss their greatest classroom obstacles and offer their ideas for overcoming them. Experts from the Center for Science Teaching & Learning, the organization partnering with Dow to implement the Challenge, chose the 25 best responses from among hundreds submitted. Teachers who submitted them were awarded \$1,000 each to use in their classrooms. A second round of the Teacher Challenge was launched for summer, with 25 more



Teachers attending the National Science Teachers Association National Conference chat with Dowbot at the exhibit where Dow unveiled its STEMtheGAP™ Education Movement.

winners to be chosen. A third round begins in August, with entries due by Oct. 31 – there will be 50 awards of \$1,000 each for this fall Challenge.

To enter the Dow Teacher Challenge, go to www.dow.com/education, or join the conversation on the STEMtheGAP Facebook page, www.facebook.com/STEMtheGAP. ■

Here are just a few of the ideas from educators who contributed to the STEMtheGAP Spring Teacher Challenge:

"Begin having students combine subject areas sooner, so they see the connection between math and science. Engineering problems should be brought in at a younger age as well." – **Jaclyn Hartman, Ada, Mich.**

"Task-based learning is a must. Students need to see math applied in real-world settings on a regular (daily) basis." – **Melissa Hesterman, West Jordan, Utah**

Mink Proves Determination and Resilience Are Critical to Success

As she overcame the many challenges to becoming a successful scientist, Kim Ann Mink drew inspiration from several people who told her she had what it takes – and one little boy who told her she didn't.

Mink is Dow's business president for Elastomers, Electrical and Telecommunications. She was the only female chemistry major in her graduating class at Hamilton College in Clinton, N.Y. and went on to earn a Ph.D. in analytical chemistry from Duke University in Durham, N.C.

Mink knew from an early age that she wanted to be a scientist. She still remembers Miss Verity, her second-grade teacher, giving everyone in her class a small milk carton and telling them to make a three-dimensional model of what they wanted to be when they grew up.

"Mine was a scientist, wearing a lab coat – including pearls and high heels," Mink remembers with a chuckle. "But one little boy in class saw it and said to me, 'Girls can't be scientists.'" – Continued on Back Page



Kim Ann Mink leads a discussion during a Dow gathering. As business president for Elastomers, Electrical and Telecommunications, Mink provides an example of the opportunities available to someone with a science background.



Teach

Small Experiments Get Big Results

THAILAND: A lack of equipment and materials prevents many schools from performing traditional science experiments in class, but ingenuity and some extra training are helping to overcome that challenge.

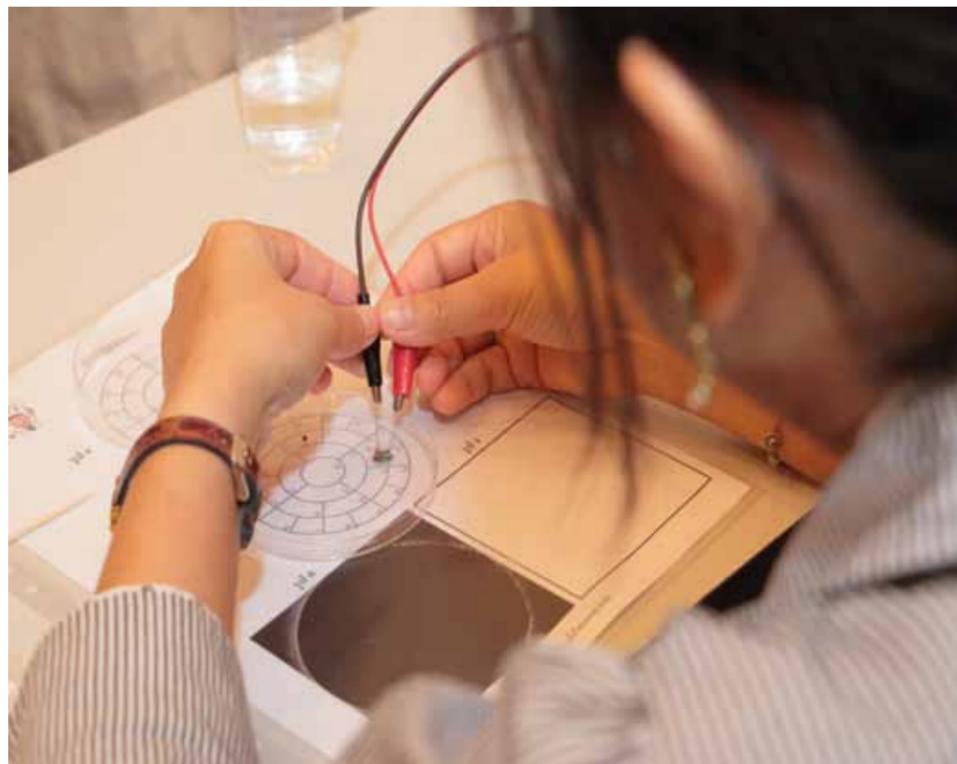
The Dow Chemistry Class project offers schools the opportunity to conduct small-scale experiments with inexpensive equipment. Dr. Supawan Tantayanon, president emeritus of the Chemical Society of Thailand, designed a lab kit and customized experiments that are fun and accessible for both students and teachers.

To help teachers make the most of the opportunity, Dow hosted a

workshop for around 41 teachers from 20 schools in Rayong province, a key production site for the company.

“The experiments are easy to understand, convenient and safe for kids to try,” said Maneewan Sanglab, a teacher from Banchang Kanchanakun Wittaya School. “All the experiments will help me stimulate the students and make the experiments more fun. I believe that the students will enjoy practicing their knowledge in these experiments. It will also develop their thinking and planning skills.” ■

A teacher learns about electrochemical separation during the Dow Chemistry Class teacher workshop in Thailand's Rayong province.



Smithsonian Experience Builds Valuable Knowledge Base

WASHINGTON, D.C.: No one does science quite like the Smithsonian Institution, so the Smithsonian Science Education Academies for Teachers (SSEAT) is a unique way to raise the quality of education for many students.

Each year, teachers from across America – many of them sponsored by Dow – travel to Washington to spend a week of intense study at the world's largest museum and research complex.

Teachers who attend the academies consistently show improved understanding as measured

by objective testing. Subjectively, they say the experience is fantastic.

“The days were full of meeting fascinating people, doing great hands-on activities, and visiting places I would probably have never seen,” one participant wrote. “The knowledge I gained from the whole academy will not go to waste. It ties directly into our eighth-grade science unit on alternative energy.”

The 2014 SSEAT season began in June with the Biodiversity Academy. For more information about the program, go to www.scienceteachersacademies.si.edu. ■

Teachers work with experts in their fields when they take part in Smithsonian Science Education Academies for Teachers.



Support Crucial in First Few Years as a Teacher

MASSACHUSETTS: More than 1,000 teachers from across America applied to take part in this year's New Science Teachers Academy. On Jan. 16, 200 of them were welcomed into the program, launching them into a year-long exploration of their craft.

Dow is the primary sponsor of the Academy, and funds 159 of the 200 teachers who take part. The funding includes online professional development, seminars and mentoring, as well as all expenses for attending the 2014 National Conference on Science Education April 3 through 6 in Boston. The speakers at this year's conference included Bill Nye (The Science Guy) and actress Mayim Bialik (Amy Farrah Fowler on “The Big Bang Theory”).

The Academy is a program of the National Science Teachers Association, a nationwide organization dedicated to improving science instruction and increasing public awareness of the importance of science education. To be eligible for the Academy, teachers must have one to four years of teaching experience and spend more than half their time teaching middle school or

high school science. The hope is that providing resources, guidance and encouragement to these new teachers will help them overcome the challenges that result in most teachers leaving the profession within five years of starting.

“New science teachers need and deserve our support as they go about the important work of bringing science to life in our schools,” said Rob Vallentine, Dow's global director of STEM Education. “Dow believes teachers are the multiplier effect on our young people, serving as an important conduit between the love of science and the connection to a STEM career.”

Teachers who have gone through the program say it is successful.

“This year of professional development has helped me set a better direction in my career,” said Tim Selgas, who took part in the 2011-12 Academy. “I will be utilizing all the great materials and ideas I received at the conference. I will be reaching out to my new friends and picking their brains.” ■

Workshops Get the Message Out

INDIA: “Multiply the Message” is a first-of-its-kind initiative that exposes physics, chemistry, biology and mathematics teachers to a wholly different pedagogy, keeping environmental concerns as the focus. The idea is simple: Each well-trained teacher will impact dozens of students per year. The impact is remarkable: “Multiply the Message” now touches the lives of more than 100,000 students each year through hundreds of teachers. ■

Thousands Make Use of Lab Safety Academy

Nothing is more important to teachers than the safety of their students, so the Dow Lab Safety Academy is proving to be a valuable resource for teachers around the world.

The Academy offers a series of free instructional videos featuring lab safety guidelines and resources developed by Dow professionals over years of real-world work. They can be viewed by anyone at the Academy website, www.safety.dow.com. The site was launched in May 2013 and in its first year it welcomed roughly 25,000 unique visitors, who viewed a total of about 175,000 pages. ■

Nationwide Effort to Train STEM Teachers Gets Boost

UNITED STATES: The effort to train 100,000 STEM teachers by 2021 took a big step forward when 31 new organizations joined 100Kin10. Dow is a funding member of the organization, which now includes nearly 200 partners unified by a single, ambitious goal: to prepare all students with the high-quality STEM knowledge and skills to equip them for success in college and the workplace. The new partners were announced Jan. 31. For more information about the campaign, go to www.100kin10.org. ■

Online Platform Helps Make Science Accessible

BRAZIL: A quarter-million public school students in Rio de Janeiro have a high-tech new way to explore science. EvoBooks, a Brazilian publisher that develops interactive educational material, joined forces with Dow and Rio’s Municipal Secretary of Education (MSE) to create the Sciences and Chemistry Laboratory, a collaborative online platform for classes that can be accessed through digital boards and computers.

The Laboratory includes simulated experiments, chemical reaction visualization and specific presentations that teachers can use in class to explain chemical elements and experiments. The contents address lessons focused on one subject at a time, following the MSE curriculum, and are presented with the use of interactive tools for students and teachers. The themes selected include physical states of matter, evolution of atomic models, periodic properties of the elements, atoms, molecules and simple and compound substances.

By financing project costs and evaluating the content, Dow brings into the classroom its experiences as one of the largest chemical companies in the world. ■

NSTA Gives Teachers A Head Start



Jennifer Sirockman poses for a photo with the Dowbot at the National Science Teachers Association conference in Boston.

Dow’s three-year relationship with the National Science Teachers Association includes an effort to support the New Science Teachers Academy, a year-long enrichment experience designed to encourage and empower these crucial players in the STEM field. This year, 155 teachers from across America were chosen for the Academy.

Some day, Jennifer Sirockman might participate in the Academy. As a May college graduate with a specialization in middle school science education, she not only has the ability to be a great science teacher, she has the passion.

“I have fallen in love with middle school and hope to become an upper middle school general science teacher,” Sirockman said. “The importance of support and participation in STEM education by well known engineering, technology and chemical companies, like Dow, cannot be overstated. These kinds of companies are where our current STEM innovations are being applied in a real-world setting and where advances in STEM are being made. These industries have the resources and expertise to assist educators in creating the next generation of STEM leaders.” ■

WEST VIRGINIA: The National Science Teachers Association (NSTA) is all about making connections, and Jennifer Sirockman is certainly well-connected.

- Sirockman, a West Virginia University graduate student, was a presenter at the NSTA National Convention.
- Her father, Michael Sirockman, works for Dow in Charleston, W.V.

- She can now call the Dowbot a personal friend.

Sirockman attended the NSTA national conference in Boston. “Of all the attractions on the exhibit floor, Dowbot, the Dow robot, was likely the most popular,” Jennifer said after the April conference, where she met Dow’s high-tech STEM ambassador face-to-inter-face, you might say.

Seminars Designed to Improve Quality of Education

TURKEY: High school chemistry teachers from several areas have been able to expand their understanding of both science and education through seminars conducted by a forward-thinking public-private partnership.

The Chemistry of Teaching event May 10 and 11 welcomed 125 teachers from Istanbul, Kocaeli, Bursa, Balikesir and Canakkale. Designed to encourage innovative new methods that teachers can apply in their classrooms, the seminars were put on by Dow Turkey and the Teachers’ Academy Foundation. A similar seminar earlier in 2014 attracted about 100 teachers.

“We appreciate Dow Turkey and the Teachers’ Academy Foundation’s support for education by developing this project,” Istanbul Provincial Director of National Education Muammer Yildiz said.

The first day of the seminar featured a gallery walk that demonstrated for teachers how chemistry functions in everyday life. Employees from several Dow businesses took part in the event, informing teachers about what goes into the products they use and answering questions. ■



Dow employees showed teachers how chemistry impacts their everyday lives during the Chemistry of Teaching event May 10 and 11.



Learn

Science of Sport Gives 55,000 Visitors to Philly Fest That Winning Feeling



A young visitor to the Philadelphia Science Festival experiences the thrill of victory on a mock medal stand.

PENNSYLVANIA: As a global Olympic sponsor, Dow has a unique ability to combine the thrill of sports with the wonder of science. It all came together at the 2014 Philadelphia Science Festival, April 25 through May 3.

For the fourth year in a row, Dow was the presenting sponsor of the festival. This year's theme, Perfecting the Science of Sport, featured appearances by Olympic athletes, a Dow-sponsored NASCAR automobile, Science Night at the Ballpark during a Philadelphia

Phillies game and many hands-on opportunities for people to experience how STEM skills make life better. More than 55,000 people attended.

The broad scope of the festival was possible because of teamwork involving Dow employees, customers, partners and several company businesses and functions, including Dow Automotive Systems, Dow Building Solutions, NASCAR Program, Sports Marketing, Olympic Operations, Northeast Public Affairs, and Global Employee Communications.

"Dow sees sport as a way to show students that science is everywhere," said Jane Palmieri, business president, Dow Building and Construction, and executive corporate board member at The Franklin Institute, which hosts the festival. "Our participation in the Philadelphia Science Festival is part of Dow's global commitment to STEM education. With our 'Perfecting the Science of Sport' theme, we hope to inspire young people about exciting STEM career options that they may have never considered." ■



The Richard Childress Racing No. 3 Dow Chevrolet SS from the NASCAR Sprint Cup Series gets kids excited. The car was displayed at Dow's festival exhibit, as well as at four Dow sites and eight Philadelphia area community locations. The exhibit showcased the science, mechanics and safety of racing — and offered attendees the opportunity to try an on-site race simulator.



Olympic luge bronze medalist Erin Hamlin talks about her experiences during an appearance in conjunction with the Philadelphia Science Festival. Fellow Olympians Summer Britcher and Jayson Terdiman also appeared at the festival, as did Dow scientist Jay Tudor, who helped create the sled that Hamlin rode in Sochi.

Awards Go to Outstanding Chemistry Researchers

KOREA: Top young researchers from across the country were presented with the Dow Korea Award in an April 18 ceremony co-hosted by the Korean Chemical Society.

The first-place award was given to Joon-Yong Park, a Ph.D. candidate in the Department of Materials Science and Engineering at the Korea Advanced Institute of Science and Technology in Daejeon, for his research paper on key materials for flexible devices such as flexible displays and wearable computers.

The award comes with a grant from Dow Korea of 3 million won, roughly equal to 3,000 U.S. dollars. Three second-place winners each earned 2 million won, and five third-place winners each earned 1 million won. An additional 1 million won was granted to the winners' research labs.

A total of 148 research papers were entered in the competition. The winners were selected by a panel of five professors and lab researchers including a Dow Korea official. ■

University Partnerships Prove Beneficial for Everyone Involved

UNITED STATES: Across America, some of the world's best students and researchers are pushing the frontiers of knowledge at some of the world's best universities, and Dow is right in the middle of it all.

This is the third year of a 10-year commitment by Dow to work with 11 top universities on a variety of research and educational initiatives. That commitment includes a total of \$250 million in funding over the 10 years, as well as access to Dow experts and their cutting-edge findings.

"Having professionals working alongside students showing what really needs to be done to solve a problem makes the students and faculty so much more effective," Stephen Forrest, vice president for research at the University of Michigan, said in the Midland

(Mich.) Daily News when the program was announced. "When you have this tight relationship, everybody feels they have a stake in the outcome."

The 11 partner universities are:

- California Institute of Technology
- University of California at Santa Barbara
- University of Minnesota
- University of Illinois at Urbana-Champaign
- Georgia Institute of Technology
- Pennsylvania State University
- University of Wisconsin
- Northwestern University
- University of California at Berkeley
- Carnegie Mellon University
- University of Michigan

For more information about Dow's university partnerships, go to www.dow.com/innovation/partnership. ■

Chemical Engineering Prize Created at Partner University

AUSTRALIA: A new scholarship for Charles Darwin University chemical engineering students is part of an expanding relationship between Dow and the research and training-based institution in the Northern Territory of Australia.

The Chemical Engineering Prize will be offered to third-year engineering students, and will also fund a 12-week internship at one of Dow Australia's local facilities. ■



Games Make Learning About Science Fun

TAIWAN: Students living in remote areas don't always have the same educational opportunities as others, so company volunteers created "Future Scientist – Dow Science Camp." Through a series of games, 54 students learned how to turn a liquid into a solid, how air pressure changes with flow speed, how insects help grow crops and other insights.

The games were designed by 35 employees from Dow's Electronic Materials, Water, AgroSciences, and Industrial Solutions businesses. ■

Play Has a Message That's Worth Repeating

UNITED KINGDOM: A stage play is proving to be an original and effective way to encourage women to pursue STEM careers. "If Chloe Can" reveals stories of women who have achieved extraordinary success in the face of adversity, and highlights career options for school girls. In particular, the play inspires women to aim high and consider STEM careers that often aren't associated with women.

After hearing about this innovative and creative way to approach motivating and engaging young women, Dow committed to support "If Chloe Can" for four years, with the intention that the play be performed in locations near company sites. ■

Students Learn Plenty on Wetlands Adventure

LOUISIANA: About 1,500 elementary school students from St. Charles Parish learned about water quality and wetlands animal life during a trip to Wetland Watchers Park on the shores of Lake Pontchartrain on April 16.

The annual event included approximately 20 interactive displays as well as food, musical acts, celebrity visits from Miss Louisiana USA 2014 and Miss Louisiana Teen USA 2014, relays and sporting contests. In addition, a nature trail tour was organized during which visitors followed the 1,600-foot boardwalk trail, visiting the Dow Palmetto Outdoor Classroom, the Dow Bayouside Outdoor Classroom, and other displays that shared the history and future of Wetland Watchers Park. ■

Sixth-grader is You Be The Chemist®

National Champion



Participants in the 2014 *You Be The Chemist* National Championship gather after the competition (Photo by Colin Coleman Fotos).

PENNSYLVANIA: Audrey Gallier, a homeschooled sixth-grader from Brookfield, Ill., survived several hours of challenging questions to become the 2014 *You Be The Chemist*® National Champion.

Audrey's triumph at the Kimmel Center for the Performing Arts in Philadelphia on June 23 capped off months of competition around the country that involved 25,000 students in grades 5 through 8. Questions at the national championship ranged from

identifying elements to balancing equations and beyond, leaving many of the audience members amazed at the intelligence of the young participants.

In addition to being the sole Diamond level sponsor of *You Be The Chemist*, Dow also sponsors several local Challenges. Many employees serve as judges, moderators and support personnel for the competitions.

"Dow believes that investing in our youth is critical for the future of the chemical industry

and our nation as a whole," said Rob Vallentine, global director, STEM education. "Through its commitment to supporting programs like YBTC, Dow aims to engage America's youngest students in a lifelong pursuit of knowledge."

The top four finishers at the national championship earned \$15,000 in scholarships. Amar Moturu of Cypress, Texas; Michael Allen of Toledo, Ohio; and Varun Mosur of Purcellville, Va., placed second, third and fourth, respectively. ■

Local Challenges Bring Out the Best in Students

TEXAS: Thousands of middle school students across America competed in *You Be The Chemist*® local challenges this spring, hoping to qualify for the national championship event.

A *You Be The Chemist* (YBTC) local challenge brings top students from several schools together to test their knowledge of chemistry concepts, important discoveries and chemical safety awareness. Dow is the competition's national diamond sponsor, and also sponsors many local Challenges, including the one in Victoria, Texas, where 36 top students from area schools gathered at Victoria East High School.

"As impressed as I was with all the students' abilities, I was also impressed with the commitment that Dow showed to the event," Diane Boyett, communications director for the Victoria school district, wrote in the Victoria Advocate, the local newspaper. "Multiple chemical engineers were on hand. There were demonstrations of experiments. It's part of the corporate commitment to science, technology, engineering and math (STEM) education in schools."

Dow provided sponsorship, and employees volunteered to help organize, local challenges in the Delaware Valley, Indiana, Louisiana, Michigan, Pennsylvania and Texas. For more information about YBTC, go to www.chemed.org/ybtc/challenge. ■



Competitor Sarah Gross pays close attention during the *You Be The Chemist* local challenge in Victoria, Texas.

Students take a break during the *You Be The Chemist* local challenge in Plaquemine, La.



Learn

Science Event/Hockey Game

Encourages Kids to Stick to It



Some of the 4,500 students who took part in Education Day at the Saginaw Spirit minor league hockey game on March 4 enjoy the Dow display at the science fair that preceded the game.

MICHIGAN: Science and sports combined forces to have a real impact on thousands of students during Education Day at the Saginaw Spirit minor league hockey game March 4 in Saginaw, Mich.

About 4,500 students from schools across the region attended the game and a sprawling science fair that preceded it. Several sponsoring organizations set up booths in a large hall connected to the ice arena, with displays and demonstrations of

robots, electricity, microbiology, molecular bonding and lots more. Dow's booth focused on some of the many ways that Dow products touch everyday lives. Dow also sponsored and helped staff an American Chemical Society booth with demonstrations and giveaways that kept kids coming in waves.

"This is pretty cool," said Jake Lounsbury, eighth-grade science teacher at Martin G. Atkins School in the Bridgeport-Spaulling district,

which sent 300 students to the event. "I've had several students come tell me how excited they are about this stuff."

After plenty of time enjoying the science demonstrations, the students moved to the ice arena for the hockey game. Dow was the title sponsor of Education Day, and Nancy Lamb, director of Public Affairs for Michigan Operations, dropped the ceremonial first puck. ■



Nancy Lamb, director of Public Affairs for Michigan Operations, drops the ceremonial first puck before the game.

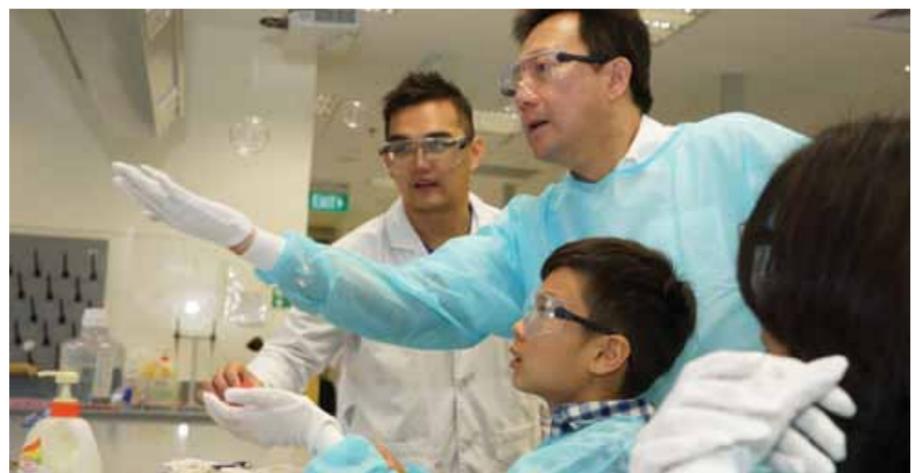
Promising Student Is Honored, Gets Opportunity to Launch Career

SPAIN: The 36th Dow Award was presented to Jaume Albornà Montserrat during a ceremony April 2 at the company's facilities in Tarragona, Spain. The event, which was widely covered by the media, was hosted by Jim Fitterling, Dow's executive vice president for Feedstocks, Performance Plastics and Supply Chain, and Felip Puig i Godes, minister of Enterprise and Occupation of the Catalan Regional Government.

The award was created in 1978 through collaboration between Dow and Rovira i Virgili University. It rewards human and academic merit, as well as the professional and research projects of students who have just completed higher studies in chemical engineering at

the university. Since 2013, the Dow Award also has come with a job opportunity: the winner receives an offer of a chemical engineering-related job within the geographic framework of Dow EMEA (Europe, Middle East and Africa).

"We encourage high-quality education through opportunities such as the one offered by this Dow Award," Country Leader Anton Valero said during the presentation ceremony. "The aim is ultimately to strengthen our chemical complex and the excellence of our university by opening up to the world as a field of opportunities, because the world is a great opportunity in itself." ■



Dow joined forces with the National University of Singapore to offer creative and exciting experiences to more than 300 students ages 12 to 15 through "Surprising Supermarket Science."

Science Workshops Are Designed to Have a Practical Appeal

SINGAPORE: Shopping for food is about as real-world an application of science as there is, so Dow Singapore joined forces with the National University of Singapore for the first time to conduct a series of science-based workshops for students titled "Surprising Supermarket Science."

The 10 workshops held in January, February and March provided more than 300 students ages 12 to 15 an opportunity to learn about science in an engaging manner. Some of the experiments in the three-hour workshops were adapted from actual solutions developed by businesses such as Dow Packaging and Specialty Plastics and Dow Consumer and Industrial Solutions. ■

GLAD Partners With PFLAG to Help STEM Students

UNITED STATES: For the 12th time, the Gays, Lesbians and Allies Employee Network at Dow (GLAD) is teaming with the national organization Parents, Families and Friends of Lesbians and Gays (PFLAG) to offer STEM scholarships for lesbian, gay, bisexual and transgender (LGBT) students.

“Dow remains firmly committed to the principles of diversity and inclusion and to supporting this scholarship program, which allows us to help cultivate the next generation of leaders in science and technology,” said Howard Ungerleider, executive vice president of Dow.

Students must show a strong interest and skill set in science, technology, engineering and/or math and support LGBT equality in their communities in order to receive the scholarship. Once selected, each recipient will receive \$3,500 for college. ■

Olympiad Sponsorship Opens Doors for Students

KOREA: Top students are selected, prepared and trained for international competition through the 2014 Korean Chemistry Olympiad, sponsored by Dow.

Koreans under age 20 who have completed or are in the process of post-secondary education at an Education Ministry-accredited school are eligible to enter the Korean Chemistry Olympiad, with the ultimate goal of competing with students from all over the world at the International Chemistry Olympiad. ■

Dow Gives Grant Makes Science Lab Possible

TEXAS: A new STEM lab was installed at Texas City High School recently, made possible by a contribution through the Dow Gives Community Grant Program. ■



Chemistry teacher Emily Stafford, center, shows students Rubi Segundo and Zach Serna how to use some of their new equipment for an assignment.

Students, Teachers Are Able To See Nature Up Close

TAIWAN: Around 70 students and 20 teachers from the Fu-Tian Elementary School in Miao Li Prefecture learned about ocean ecosystems, forests and wetlands during an April 8 trip to the Hong Shu Harbor rehabilitation park in Hsinchu Prefecture. Nearly 30 Dow volunteers led the trip, which came about through the company’s two ongoing corporate citizenship programs – Hope Reading, which encourages children to read books, and Protect Ocean, which helps safeguard marine biodiversity. ■

Preschoolers

Take the Bait



Jacob, son of Dow employee Mary Meyer, learns about fish at the event announcing Dow’s support for the Fish Tales Learning Zone.



To celebrate the announcement of Dow’s sponsorship of the Fish Tales Learning Zone, children take part in Gyotaku, the art of Japanese fish painting that encourages exploration of senses and discovery of colors and textures.



Dow employee Stacey Heidbrink helps daughter Abigail paint a fish at the announcement event.

LOUISIANA: A local tradition of children and their parents going fishing together has been updated to promote STEM education at the new Fish Tales Learning Zone at Baton Rouge’s Knock Knock Children’s Museum.

Support from Dow will allow Fish Tales to provide hands-on experiences where children:

- Explore using their senses, discovering various colors and textures
- Enjoy gross motor activity by catching a variety of Louisiana fish
- Develop early literacy by reading text, observing pictures and/or environmental cues
- Heighten STEM literacy development through measurements, weights, etc.
- Engage in play patterns that incorporate invention, creation, leadership and cooperation

“At Dow, we believe that an engaged, hands-on learning approach is the foundation to build the education system and workforce of the future,” said Abby Cook, Public Affairs manager for Louisiana. “Knock Knock’s Fish Tales Learning Zone will help us do just that.” ■

Challenging Students Pays Off

BRAZIL: Students who created the top three projects in the Battle of Concepts were honored at a ceremony Feb. 27 at Dow’s headquarters in São Paulo.

The competition opened in August 2013 and challenged students to think of how mattresses made of polyurethane foam could become more attractive to end consumers.

Created in the Netherlands in 2006, Battle of Concepts is an online portal whose purpose is to bring companies closer to university students and young professionals. In Brazil, the idea was implemented by Hans Van Hellemond in 2009.

“With this type of project, students can implement everything they learn in the classroom and be better prepared for the challenges that they’ll face in the job market,” explained Van Hellemond, president of Battle of Concepts in Brazil. ■

The Year’s First Winners of Sustainability Award Focus on Clean Water in Africa

MASSACHUSETTS: The first student team to be honored in the 2014 Dow Sustainability Innovation Student Challenge Award (SISCA) program is a group from Massachusetts Institute of Technology for research into a low-cost device that measures the usage of life-saving water filters in Africa.

The group, known as the CleanData-CleanWater team, worked with a community partner in Tamale, Ghana, to create a monitoring device that would be fitted to each water filter and record daily use for up to a year, enabling more rigorous studies of filter usage and impact.

Graduate students at 17 participating universities in seven countries are eligible for SISCA awards. Each university establishes its own selection process and criteria in line with Dow’s high-level criteria, which include potential for solving world challenges, interdisciplinary nature of the work, innovative thinking and research excellence. Grand prize winners receive \$10,000, and runners-up receive \$2,500.

SISCA was launched in 2009 to promote forward thinking in social and environmental responsibility among the world’s top university students. ■



Learn

Robots Rule

Connection to Competitive Robotics Program Keeps Growing

MISSOURI: Two teams sponsored by Dow were among 400 competing at the *FIRST*[™] Robotics Championship April 23 to 26 in St. Louis, Mo. In all, more than 12,000 students from all over the world took part in the event, guiding their customized robots in throwing balls around a special arena to earn points in pursuit of tournament advancement.

Team 4819 from Mount Pleasant, Mich., compiled a record of 7-3 in the event, while Team 2619 from Midland, Mich., was 4-6. Neither advanced to the event finals, but two teams from Michigan were part of the winning alliance and a third Michigan team earned the prestigious Chairman's Award.

"There's nowhere else I'd rather be, but here in St. Louis with you, the future," said music star will.i.am, a strong STEM education advocate,

speaking to a crowd of 20,000 people at the event. "If you want a peek at the future, you come here to the *FIRST* Championship. And when I say future, I mean future leaders, future inventors, and future problem solvers."

FIRST (For Inspiration and Recognition of Science and Technology) is a nonprofit organization dedicated to inspiring young people to be science and technology leaders by engaging them in exciting, mentor-based programs.

For a video tour of the *FIRST* Robotics Championship led by actress Emma Dumont, go to YouTube. For more information about the *FIRST* organization, go to www.usfirst.org. ■



Team members work on their robot during the time between rounds of competition.

Midland Hosts District Competition for First Time

MIDLAND: The excitement of a *FIRST* Robotics showdown came to Midland, Mich., for the first time when 40 teams gathered March 21 and 22 for the Great Lakes Bay Region *FIRST* Robotics district competition.

"Someone described it as a two-day party," said Mike Rehberg, an investment specialist at Dow who serves as president of *FIRST* of the Great Lakes Bay Region, the local chapter that hosted the Midland event. "Let me put it this way: I wear ear plugs for two days. But it is a lot of fun."

Raymond Bady, a senior at Saginaw High School with plans to play college football, is part of his school's team, one of thousands of students across the country who have been swept up in this growing robotics phenomenon.

"It was something that sounded like it would be interesting. Then, after the first year, it was like, man, I've got to keep doing this," Bady said.

Saginaw High's squad, Team Trobot, advanced to the tournament semifinals, guiding their robot around the arena with a skill that enabled it to score repeatedly in the custom-designed game.

"I'm pretty proud of how well we've done this year," Bady said. "Last year was our first year, and we just wanted to be able to make a robot and go to competitions. But this year, we want to do better."

Bady said his experience playing football helps him when he's driving the team's robot. At the Midland meet, his composure was evident as he remotely rerouted the robot's power supply when a bad battery caused it to freeze up in the middle of a playoff round.

"Robotics is like a sport to me," he said. "And being on the robotics team has helped me in a lot of ways. I know how to build things, how to wire things, stuff I never knew before." ■



"Robotics is like a sport to me. And being on the robotics team has helped me in a lot of ways. I know how to build things, how to wire things, stuff I never knew before."

– Raymond Bady
Senior, Saginaw High School

The pageantry of the FIRST™ Robotics Championship offered a thrill to thousands of students, fans and robots who gathered for the event in St. Louis, Mo.



Team 2619's robot fires a shot at the goal during the FIRST Robotics Championship.



Members of Saginaw High's Team Trobot look up at the packed house in the stands of Dow High School in Midland, Mich., as they prepare to compete in the Great Lakes Bay Region FIRST Robotics district competition.



Dow Mentor Matt Mittag works with students at a FIRST Robotics competition.

Being a Dow Mentor is Addictive

WISCONSIN: As a high school student in Wisconsin, Matt Mittag didn't know what he wanted to do with his life. Then he discovered *FIRST*™ Robotics and fell in love with the process of making things work.

Now, Mittag is a development engineer for Dow in Edina, Minn., and he devotes much of his free time to mentoring the Edina High School *FIRST* Robotics team as a way to give the next generation a shot at finding that same love.

"It's addictive," Mittag said of his work with *FIRST* Robotics. "You get involved and you see what a difference you can make in the lives of so many kids."

FIRST (For Inspiration and Recognition of Science and Technology) is a nonprofit organization founded in 1989 by entrepreneur Dean Kamen. Its programs include the Junior *FIRST* Lego League for ages 6 to 9, the *FIRST* Lego League for ages 9 to 16, the *FIRST* Tech Challenge for students in grades 7 through 12 and *FIRST* Robotics for grades 9 through 12.

"A *FIRST* Robotics meet has the atmosphere of a sporting event," Mittag said. "Except that at a sporting event, everybody is cheering for one team or the other, but they're not on the team. At a *FIRST* Robotics meet, you've got maybe 5,000 kids, and they're all cheering for 40 or 60 teams, and they're actually on the teams."

Every year, the *FIRST* organization designs a game that the robots will play during all competitions for that season. Once the season's game is announced, teams have about six weeks to design, build and test a robot. Teams can have anywhere from four to

more than 100 members, but most have several dozen, each focusing on a specific part of the process. Intelligence, know-how, dedication and teamwork are all vital.

"I joined a *FIRST* Robotics team when I was a junior in high school because some of my friends were on the team," Mittag said. "I knew I liked to build things, but I had never had a chance to interface with engineers or anyone in the professional field of engineering. I realized that, hey, this is something I can get into."

That experience was a major reason he chose to study engineering in college, Mittag said. Now he not only mentors the Edina team, he also is specially trained to serve as a robot inspector at competitions.

"I've seen multiple situations just like mine where students didn't know what they wanted to go into, and after joining the team, they realized that this engineering thing is kind of fun," Mittag said.

Mittag is one of three Dow employees in the Minneapolis area who mentor *FIRST* teams. Dow also provides sponsorship – and Dow employees provide guidance – to teams in Michigan, Massachusetts, Louisiana, Texas, Pennsylvania and other locations.

"It's an absolute blast," Mittag said of being a mentor. "I know in 20 years it's something I'll still be doing. It's exciting, you make a difference and it's just a heck of a lot of fun." ■



Learn

Mind Trekkers Know How to Make Science Fun

WASHINGTON, D.C.: A growing relationship with the Mind Trekkers group from Michigan Technological University is paying dividends not only for the school and its students, but for people across the country who get to experience how much fun science can be.

Mind Trekkers are MTU students who wow crowds at festivals, fairs and similar gatherings with their STEM Road Show, a variety of displays, demonstrations and hands-on activities.

Dow sponsored a MindTrekkers team that went to the USA Science & Engineering Festival in Washington, D.C., during April. Dow scientists accompanied the students and helped to engage the waves of people who visited. More than 325,000 people attended the festival and surrounding events over a three-day period.

“The partnership with Dow was fantastic,” said Stephen Patchin, director of MTU’s Center for Pre-College Outreach. “In our STEM compound, participants and their parents could experience the ‘WOW!’ of areas from chemistry to robotics. They could walk on water, eat ice cream made in 60 seconds right before their eyes, race a computer to complete a puzzle, and even have a conversation with the roaming Dow Chemical com-

puter, Dowbot. The aha! moments produced as young minds discovered the science behind the mysteries were contagious.”

The Mind Trekkers also appeared at the first Dow Great Lakes Bay Science and Engineering Festival last October at Delta College, near the company’s Michigan headquarters. And they are on tap to appear for the second year of the festival in September 2014.

To experience the USA Science & Engineering Festival, watch the MTU video on Youtube, www.youtube.com/watch?v=b38h_AHpULL. To learn more about the festival, go to www.usasciencefestival.org, or check out Mind Trekkers at www.mindtrekkers.mtu.edu.

Visitors to the USA Science & Engineering Festival are mesmerized by a foggy demonstration at the Mind Trekker display.



Mind Trekker Rachel Kloc from Freeland, Mich., shows off a Foam Gnome at the group’s display at the USA Science & Engineering Festival in Washington, D.C. Visitors to the display make their own gnomes by mixing small amounts of isocyanate and polyether alcohol, which sparks an exothermic reaction and creates foam that grows up and out of the cup. Decorating the creation adds fun and creativity to the simple lesson in science.



Rachel McCollough from Anchorage, Alaska, has money to burn at the USA Science & Engineering Festival. When a dollar bill is soaked in rubbing alcohol, which is 70 percent alcohol and 30 percent water, the cotton threads in the bill absorb the water, so the paper is protected when the alcohol on the outside of the bill burns.



A group of about 60 students gather with Dow employees to shop for supplies before the beginning of their school year.

Volunteers Help Students Start the School Year Right

MALAYSIA: A group of about 30 Dow employees helped 60 low-income students in Malaysia get ready for the start of the school year by purchasing supplies such as school uniforms, bags and stationary.

Each Dow employee accompanied two students to the Mydin Wholesale Hypermarket in Subang Jaya, not only to purchase the basic necessities required for the children to be successful in school, but also to teach them how to manage the money available.

“It is through initiatives such as this, that we can be a good corporate citizen and give back to the community,” said James Thong, Dow’s country manager for Malaysia. “I am very pleased to say that there was no shortage of volunteers for this program.”

Labs Provide Hands-on Learning in Different Ways

TEXAS: Two different approaches to putting the wonders of science into the hands of students were launched recently.

In Texas City, a STEM lab was installed at Texas City High School. The supplies and equipment were made possible by a grant through the DowGives Community Grant Program.

Meanwhile, the Calhoun County Independent School District (CCISD) unveiled its new Mobile Energy

Resource Lab (MERL), a 22-foot trailer that has been transformed into a mobile classroom showcasing solar, wind, biofuels and other sustainable energy solutions. MERL will spend time at each CCISD campus, as well as other local community education events as appropriate.

MERL was unveiled on May 19 as part of Sustainability Day, in which Seadrift Operations partnered with Calhoun County and CCISD to

celebrate the environment. The event showcased projects funded by The Dow Chemical Company Foundation over the past few years and included tours of the Dow Sustainability Center and free recycling of electronics.

The Sustainability Center, which opened its doors in 2011, is a recycling and environmental education facility open to the public for education and recycling drop off. CCISD uses the facility as a field trip destination to enhance learning in STEM fields.



Students learn about energy inside the Mobile Energy Resource Lab.



Visitors to the Conner Prairie Curiosity Fair in Fishers, Ind., get hands-on understanding of science concepts from Science Ambassadors volunteers.

DAS Science Ambassadors is a Growing Operation

INDIANA: The growth of Dow AgroSciences' (DAS) Science Ambassadors group continued in the first half of 2014, not only attracting more participants in and around its base in Indianapolis, but expanding to other Dow sites around the country.

By the end of May, 286 DAS employees had joined Science Ambassadors, which organizes community outreach activities and sends members to events ranging from Celebrate Science Indiana to the Conner Prairie Curiosity Fair. The group has developed a menu of engaging, informative activities its members can take to schools, organizations or events. Some of the most popular are titled "Healthy Oils," "DNA Extraction," "DNA Wristbands" and "Genes Are a Toss Up."

"The ability to participate in STEM outreach was part of the reason I wanted to work here, and I think others feel the same way," said Ronda Hamm, a Science Ambassador. "They're excited to see the impact our program is having on the community."

That excitement can now be shared by more people across the country, as Science Ambassadors is spreading to other Dow sites. Work is under way to launch Science Ambassadors programs in Texas, Michigan and the Delaware Valley. For more information about Science Ambassadors, contact Larry Sernyk at jlsernyk@dow.com. ■

"The ability to participate in STEM outreach was part of the reason I wanted to work here, and I think others feel the same way."

– Ronda Hamm
Science Ambassador

Students Show Their Stuff at Science Fairs

CALIFORNIA: More than 1,700 high school students from around the world earned the right to compete in the Intel International Science and Engineering Fair May 11 through 16 in Los Angeles. Some of those students had all their expenses paid by winning local science fair competitions sponsored by Dow.

The company has a long history of supporting these competitions, such as the Delaware Valley Science Fairs in Philadelphia and the Great Lakes Bay Regional Science & Technology Fair in Saginaw, Mich. ■

Chinese Chemistry Olympiad Involves More Than 150,000

CHINA: For the second year in a row, Dow is the exclusive sponsor of the Chinese Chemistry Olympiad, which kicked off on April 26 in Changchun. Dow partners with the Chinese Chemistry Society in organizing the prestigious academic competition, which began in 1984 and now involves over 150,000 high school students across the country.

"We are proud of the role that Dow plays in inspiring the next generation of scientists in China," commented Peter Wong, president of Dow Greater China. "The Olympiad provides a good platform for Dow to demonstrate our long-held passion for science, which we hope will be contagious among China's youth." ■

Strengthening Bonds With Junior Achievement Opens Doors

DELAWARE: Gov. Jack Markell helped launch a new era of enhanced collaboration between Dow, Junior Achievement of Delaware and the Delaware STEM Council, to expand STEM-focused career readiness efforts directed at thousands of middle school students across the state.

"The need is significant," Markell said at an announcement event April 15, noting that Delaware has 3.8 jobs open in STEM fields for every unemployed worker, while there are 1.7 unemployed workers for every available non-STEM job. "Jobs exist in STEM fields and we must do everything we can to increase the STEM readiness of our students and expand the STEM-capable workforce." ■

Top Student Receives Inside Look at Water Treatment Technology

SPAIN: As a reward for his successful participation in the All-Ukrainian Junior Water Prize, a national division of an international contest, high school student Victor Kyrilenko of Krivoy Rog, Ukraine, was welcomed at Dow's Global Water Technology Center in Tarragona, Spain, for a tour and discussions with company researchers in March.

The research and development team from Dow Water & Process Solutions showed Victor the company's modern scientific laboratory and taught him about water treatment technologies and unique pilot units. ■

Volunteers Make a Difference in People's Lives

INDIANA: The old saying "Been there, done that, got the t-shirt" carries an added sense of pride for the DAS Science Ambassadors. Kim Richey, one of the group's leaders, explained that members receive an Ambassadors t-shirt when they volunteer for their first event.

"People say, 'Hey, I got my t-shirt. I'm special,'" Richey said. "Some people just wear the shirt around, even if there's not an event. They look nice."

Richey said she became active in Science Ambassadors because she could see the value of engaging the public, especially students.

"We're enlightening them, and we're attempting to get the kids excited about science," Richey said. "At the end of the day, I don't expect them to be able to repeat back to me what they learned. But if they say, 'Science is cool,' they might decide that a career in science would be cool." ■



Dow AgroSciences employee Kim Richey volunteers at a Science Ambassadors event in Indiana.



Work

Take Your Child to Work Day Opens Many Doors

Dow's Max Schneider, left, takes part in a video conference communication challenge with Dan Schneider and Grace Pnacek during the Take Your Child to Work Day events organized by I/S & Auditing employees in Midland, Mich.



UNITED STATES: Many sites across the United States were busy on April 24 for Take Your Child to Work Day, an annual event that reinforces the real-world application of concepts and ideas taught in schools.

In Midland, Mich., for instance, I/S & Auditing employees welcomed 120 children who participated in activities ranging from building a catapult to creating a tornado in a bottle.

"This event grows larger each year both with the number of participants and the amount of activities," said Nancy Pnacek, one of the organizers. "Our goal has always been to include STEM wherever and however often we can, in hopes of having the youngsters get excited about the possibilities of technology, science, engineering and chemistry." ■

No Messing Around: Fast Start Program Gets People into the Workforce Quickly

MICHIGAN: For the ninth time since 2008, a group of people with a variety of experiences has learned to put their knowledge to work with the help of the Fast Start program at Michigan's Delta College.

Participants put in 480 training hours over 12 weeks in the program, which prepares them to be a chemical process operator. Graduates of the program have an 84 percent placement rate, the college reports.

This year's class of 24 students began in February and completed the program on May 16.

Dow initially developed the program, then transitioned it to Delta, a community college located near Dow's global headquarters in Midland. Dow provides continuing assistance to Fast Start, as does the state government's employment agency and other manufacturing companies in the area.

"We work very closely with regional employers to assure that

their hiring needs are met and to determine when they need qualified workers and how many," the college's website says.

A new Fast Start class is organized when the college determines that there is pending need for more process operators.

"Fast Start is designed for individuals who can make a full-time, 30 hour per week classroom/training commitment (and an additional 15-20 hours per week outside of class)," the website says. "Because it is an accelerated class, the "best fit" candidates will have good pre-test scores, a college degree or completed coursework in a technical area preferred, and work or military experience in a technical/mechanical field."

Those who qualify are on their way to a new career in a matter of weeks. ■

Technical Center Opened

RUSSIA: The connection between education and real-world operations will be strengthened with the opening of a new Technical Center within Moscow Power Engineering Institute in Russia.

Dow Water & Process Solutions in collaboration with research and production company Mediana-Filter opened the facility on April 7.

The Technical Center will serve as a laboratory for students, be used for engineering and scientific research, as well as a training facility for plant engineers. It will also help to improve students' and engineers' awareness of state-of-the-art technologies for water treatment, allowing them to design new equipment and develop their operational skills.

"The Technical Center will provide a good opportunity for students to practice their skills and learn more about future professions and Dow technologies," said Gergely Nagy, commercial director of Dow Water & Process Solutions in Russia, the Commonwealth of Independent States, Central Europe, Greece and Turkey. ■

Internships Let Students Hone Their Operations Skills

WEST VIRGINIA: Students at Kanawha Valley Community and Technical Center in South Charleston, W. Va., can gain invaluable exposure to modern production operations through a new internship arrangement with Dow.

Not only does the new Operator Internship Program give the school's Chemical Operations students an opportunity to experience production scale processes and equipment, it also allows them to evaluate their interest in the industry. And offsetting their education expenses helps, too.

In February, Dow welcomed five interns to the West Virginia Operations internship program. ■

University Students Glimpse Future Prospects

RUSSIA: More than 100 students at Moscow State University of Fine Chemical Technologies met with Dow representatives at the university's March 28 career fair.

Company representatives performed two presentations, highlighting existing opportunities available within Dow for young chemistry specialists. Dow representatives spoke about the business directions of the company in Russia and the Commonwealth of Independent States and offered perspectives on career development, all the while sharing their personal experiences of working for the global company.

Dow employees at the event included Natalia Dorozhkina, Renat Kashapov, Vlad Starikov, Yulia Golubeva and Nadya Yan. ■

Partnership Helping Discover Future Stars



Australian student Brydie Creagh got hands-on experience during her placement at the Waireka Global Discovery Research Station in New Zealand.

AUSTRALIA: Dow AgroSciences Australia/ New Zealand is helping to deliver hands-on opportunities for bright Aussie students to use their skills in a real-world work setting.

Since 2010 the ANZ Marketing and R&D teams have worked together with the Primary Industry Centre for Science Education (PICSE) to deliver a range of programs, from awards and competitions to field work and scholarship opportunities.

PICSE is a non-profit organization that aims to attract more young people into careers in science. Dow AgroSciences has helped bring PICSE's programs to life by providing students with practical experiences outside the classroom.

"The support of global companies such as Dow AgroSciences is critical for ensuring the future success of the program. By exposing students to the world of ag through industry placements, they get to taste, touch and feel the many and varied career opportunities," said Gordon Stone, PICSE national director.

Matt Cahill, Dow AgroSciences' Research and Development leader for Australia and New Zealand, said the PICSE partnership was part of ANZ's approach to promoting STEM opportunities.

"Through our relationship with PICSE, we've opened our doors to young people, providing them with the opportunity to work alongside our leading researchers and positioning ourselves as an employer of choice. Our sponsorship has uncovered many shining stars who are now undertaking tertiary studies in agriculture. The future is looking bright!"



Will Howard, born and raised in a city environment, had the experience of a lifetime working alongside researchers at a Dow AgroSciences research station in Breeza, New South Wales. Here he poses with Natalie Elias, left, a Dow AgroSciences researcher, and Susanna Grieg, right, science education officer at the Primary Industry Centre for Science Education.

Some of the activities Dow AgroSciences has supported since entering the partnership with PICSE in 2010 include:

- A national online science investigation awards program for students
- Regular one-week industry placement scholarships at research stations in Breeza, New South Wales
- An annual, all-expenses-paid trip to the Waireka Global Discovery Research Station in New Zealand
- Five-day science camps in New South Wales and Queensland hosted by PICSE
- Professional development awards for PICSE Science Education Officers
- Providing speakers for school functions to promote agriculture careers ■

This Sure Isn't Boring

NEW ZEALAND: After a work placement at Dow AgroSciences' Waireka Global Discovery Research Station in New Zealand, high school student Amy Rose from Queensland, Australia, has discovered the world of agricultural science as an exciting new career option.

Amy spent a week working alongside top scientists from around the world, assisting with research on new crop protection products critical to the future of Australia's agricultural industry.

"For those who think ag chem is boring, they obviously haven't witnessed a day in the life of an ag scientist. I was seeing chemistry at work in the field that no one else in the world had ever seen before. I got to participate in trials and tests that have the potential for a massive effect on the world's future food supply," she said.

During her placement, Amy assisted in data collection, helped plan trials on emerging fungicide and insecticide products in wheat and vegetable plants, observed trial applications and tests using new technologies, and assisted in trial reporting. It provided her with valuable hands-on experience and knowledge that she'll be able to use throughout her education and future career.

"It was fun to see practical applications of the methodologies I have been learning in the classroom," explained Amy. "I've studied and am familiar with the scientific method, but to see it put to practical use – to get out and see it actually working in real life – was just so great."

Amy was selected for the assignment as part of the PICSE/Dow AgroSciences Travelling Scholarship Program, an initiative developed through a partnership between Dow AgroSciences and the Primary Industry Centre for Science Education (PICSE).

The Travelling Scholarship Program aims to introduce the world of agriculture to students who may have never before considered it a viable career option – as was the case for Amy, a student at Pittsworth High School in Queensland.

Though there is a shortage of young people entering the agricultural sector, Field Station Manager Brian Husband said that working with students like Amy makes him optimistic about the future.

"Students often don't tend to see agriculture as an exciting or adventurous career option. But Amy's enthusiasm, intelligence and passion make me very optimistic." ■



Amy Rose works with Somsak Samanwong, a scientist from Thailand, studying the impact of the diamondback moth on a broccoli plant.



Advocate

Researchers Analyzing Region's STEM Opportunities

“This will ultimately help prepare our students for jobs of the future and ensure our employers have the talent they need to fill their STEM jobs.”

– Carolyn Wierda
Interim Dean at Saginaw Valley State University

MICHIGAN: A groundbreaking partnership between leaders from business, education, government and philanthropic organizations has made possible a detailed analysis of the STEM education opportunities available in the Great Lakes Bay Region (GLBR).

For this analysis, called the GLBR STEM Impact Initiative, highly regarded researchers from around the country were contracted to study the region and make recommendations

about what can be done to ensure that students have the skills needed in the modern economy.

Dow not only contributed funds to the effort, but several employees have filled crucial leadership roles in the effort to make the analysis a reality.

“Our region has a proud history of strength in manufacturing, science and innovation, and we need well-trained, motivated people to continue the innovation, responsiveness and

productivity that the economy rewards,” said Carolyn Wierda, interim dean at Saginaw Valley State University and chair of the task force that commissioned the Impact Initiative. “This will ultimately help prepare our students for jobs of the future and ensure our employers have the talent they need to fill their STEM jobs.”

The findings of the GLBR STEM Impact Initiative are to be released in the fall. ■



Consortium Creating a Network of STEM-Based Schools

EGYPT: The Education Consortium for the Advancement of STEM in Egypt (ECASE) is in the midst of a four-year plan to open up to five new STEM-focused schools in the north African country.

In two years, ECASE has succeeded in establishing two schools, the Maadi STEM School for Girls, home to 120 students in 10th and 11th grades, and the October STEM School

for Boys, with 140 students.

Dow is one of the main supporters of ECASE, along with USAID-Egypt, World Learning, the Franklin Institute, and 21st Century Partnership for STEM Education. In addition, students from the schools have visited Dow sites in Egypt and worked with company employees to broaden their understanding. ■

Students from the Maadi STEM School for Girls visit the Dow Cairo System House.

Panelists at Tokyo Summit Discuss Role of Women in STEM and How Science Impacts Lives

JAPAN: The Women in Business Summit, the biggest event in the history of both the U.S. Japan Council and the American Chamber of Commerce in Japan, attracted more than 1,000 people to Tokyo for high-level planning that included a panel discussion titled Women in STEM.

Sayaka Ito, account manager, Dow Water & Process Solutions, was one of the Women in STEM panelists. She was joined by two other panelists in sharing her thoughts on what science can do to improve people's lives. “To make clearer connections between education and real life, providing children with better opportunities to learn how the power of science can influence the things people see and touch, is essential,” she said.

Peter Jennings, Dow Japan president and chairperson of the Dow Women's Innovation Network for Asia Pacific, also attended the May 27 summit. ■



Sayaka Ito, an account manager with Dow Water & Process Solutions, took part in a Women in STEM panel discussion at the Women in Business Summit May 27 in Tokyo, Japan.

Andrew Liveris Signs Historic STEM Pact

Business Publication Taps Expertise in Raising STEM Issues

MICHIGAN: An extensive report in May by Crain's Detroit Business included Dow's top STEM advocate among a group of academics, business leaders and politicians speaking in support of investment in education.

Rob Vallentine, global director of STEM Education, discussed the wide variety of jobs in the company that require STEM skills, as well as how a shortage of students choosing those subjects is hindering the company. ■

Chemical Engineering Discussed at European Economic Congress

POLAND: As an Official Partner in the Sixth European Economic Congress, Dow leaders participated in a number of discussion panels during the conference held in Katowice, Poland, during early May. One of the panels focused on the future of chemical engineering in Europe, with Christoph Sikora, Dow's general manager for Central Europe, representing the company. ■

More Leadership Provided Within STEMconnector

WASHINGTON, D.C.: Another Dow leader has filled a key role within STEMconnector, a consortium of companies, nonprofit associations and professional societies; STEM-related research and policy organizations; government entities; universities and academic institutions concerned with STEM education and the future of human capital.

On June 8, the organization named the members of its Food & Ag Council, which pledges to "join with America's youth to inspire, nurture and engage individuals to passionately pursue Food and Ag careers by unlocking their full potential as leaders and professionals." David Sousa, public affairs manager with Dow AgroSciences, is among the members.

In addition, Delta College, located near Dow's Michigan headquarters, is now a member of STEMconnector's Higher Education Council. ■

WASHINGTON, D.C.: Dow has joined forces with 25 other leading American companies in committing to a new era of support for STEM literacy.

President and CEO Andrew Liveris signed the Commitment to Excellence in STEM, pledging Dow's involvement in the effort by the nonprofit group Change The Equation (CTEq) to ensure that all children in communities across the U.S. have access to high-quality, excellent STEM learning opportunities.

The linchpins of the Commitment are collaboration with other corporations as well as programs and communities; high expectations for all students; data-driven advocacy for STEM; and the availability of high-quality STEM learning programs in communities across the country.

"We applaud Corporate America for its role in making universal STEM literacy a reality," said CTEq CEO Linda P. Rosen. "The public declaration of support for the Commitment and the actions that will ensue from the corporate community recognize STEM literacy as a transformative life-skill that impacts the future success of our young people and the ability of our nation to remain a leader in innovation."

To learn more about CTEq visit www.changetheequation.org. ■



Boys and Girls Clubs Looking for New Ways to Help



CALIFORNIA: With a special focus on groups who are underrepresented in STEM fields, the Boys and Girls Clubs of America gathered leaders from the business, academic and government fields in search of new ideas at the STEM Great Think in Redwood City on May 2.

Randy Fischback of Dow Public & Government Affairs in Pittsburg, Calif., took part in the discussions, which were intended to "develop a strategic plan for public-private solutions to advance STEM programs in the out-of-school time space; engage and retain more underrepresented youth in STEM education; and create clear pathways and partnerships to guide more youth to succeed in STEM careers."

The national Boys and Girls Clubs organization believes that out-of-school time, which means after school and summer, plays a critical and often overlooked role in helping young people develop needed skills and competencies. ■

Joe Harlan Describes Role of STEM Education in Economic Growth

TEXAS: A key Dow executive explained to business leaders in Houston how vital STEM education is to everyone.

Joe Harlan, executive vice president, told the Houston Rotary that the United States is in the midst of a labor crisis that could threaten the economy if we don't take steps now to strengthen the STEM skills of our students and workforce. He said the idea that we don't have enough

skilled workers is difficult for many people to accept because the U.S. has millions who are unemployed.

"There is not a worker shortage anywhere in the world," Harlan said. "We have a skills shortage. Businesses report nearly four million jobs are open because the workers who are available don't have the right skills."

The lack of talent is not only a drag on productivity now, he said, it is also threatening future planned

investments. Because of new sources of affordable energy, there are nearly 130 energy-related projects planned for the U.S. They represent more than \$100 billion in potential investments, but won't happen unless we have enough skilled people to build and staff the facilities, Harlan noted.

There is a great demand for workers with college degrees in STEM subjects, Harlan said. But there is a greater need for STEM workers with

associate degrees or less. He cited a recent government report which said that nearly two-thirds of all future job openings will come in occupations that don't require a postsecondary education. They will, however, require more STEM skills. ■

Here's How to Learn More

A variety of resources is available to anyone who wants more information about science, technology, engineering and math. Here are some of those resources, as well as people within Dow who are involved in the company's STEM education activities around the world.



STEMtheGAP™ Education Movement:

A worldwide STEM education community built on the premise that many people have insights into the challenges and opportunities that exist in the real world, and communication between those people is the best path toward progress.

www.facebook.com/STEMtheGAP

Chemical Educational Foundation

A nonprofit organization that runs the You Be The Chemist® Challenge, a nationwide competition for middle school students. In conjunction with the competition, the foundation provides several resources for students and teachers.



You Be The Chemist Essential Elements:

A professional development program designed to assist K-8 educators – the “essential elements” in education – in teaching chemistry concepts through hands-on learning and connecting those concepts to students’ everyday lives.

www.chemed.org/ybtc/essential

You Be The Chemist Activity Guides:

Nearly 1,000 pages of free lesson plans, science content, activity sheets and study materials designed to provide enriching scientific engagement in the classroom – plus several online videos showing experiments that are economical and feasible for any class.

www.chemed.org/ybtc/guides

You Be The Chemist Newton & Kelvin's Laboratory:

Online activities and interactive lessons.

www.chemed.org/ybtc/lab/

Dow Lab Safety Academy:

A digital learning academy that leverages Dow’s best-in-class industrial safety culture and practices for laboratory safety. The Academy is divided into a series of modules defining the next steps toward building a sustainable, safe work culture in academia that will help prevent serious incidents and better prepare students for a transition to industry from academia.

www.safety.dow.com



Career Videos:

A series of online videos that describe some of the many jobs available to people with STEM skills.

www.dow.com/company/citizenship/stem/explore-stem.htm

Chemical engineer MacKenzie Stango is one of the Dow employees featured in the videos on the Careers in STEM website.

Online Experiments:

Several fascinating experiments that kids can do at home or in the classroom, grouped by grade level.

www.dow.com/company/citizenship/stem/student.htm



Key Dow People:

Dow is involved in a number of STEM initiatives around the world. To learn more about what is happening, or to get involved, contact one of these people:

Marianne Berthelot, Africa	MBerthelot@dow.com
Shawna Bruce, Canada	SMBruce@dow.com
Gabriella Cone, Texas	GVCone@dow.com
Abigail Cook, Louisiana	APCook@dow.com
Fadi Fahem, India, Middle East, Africa	FFahem@dow.com
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Dow also works with and supports a number of organizations that contribute to the quality of STEM education. Here are the Dow contacts for some of those organizations:

Dow Science Ambassadors	Michelle Langley	MRLangley@dow.com
Project Lead the Way	Meredith Morris	MAMorris@dow.com
You Be The Chemist®	Meredith Morris	MAMorris@dow.com
FIRST™ Robotics	Jordan Tremblay	JTremblay@dow.com

For more information about Dow’s education initiatives, contact Rob Vallentine, global director, STEM Education at RMVallentine@dow.com.

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Mink Finds Success Through Determination and Resilience

Fortunately, Miss Verity was there to set the record straight.

“She said, ‘You can be anything you want to be,’” Mink recalled.

It wasn’t the last time that a teacher gave Mink the support she needed, or that a colleague provided invaluable guidance.

“I’ve been extremely fortunate,” Mink said. “I have had incredible mentors and sponsors who were there for me throughout my education and career. The world is a big place; it is important to have people who believe in you.”

It’s no surprise, then, that Mink has taken a leading role in providing opportunity and support to many

people who face extra challenges along the path to success. She is the North American co-chair for the Women’s Innovation Network, a forum for Dow people to share experiences, find mentors, seek professional development and gain access to senior leadership. She is the business representative for the Dow STEM Council, an internal group responsible for coordinating the company’s global STEM education strategy. And she is Dow’s representative on the Catalyst Board of Advisors, a partnership of top companies dedicated to promoting workplace diversity and expanding opportunities for women in business.

It’s all about making sure people have the opportunity to succeed no matter their gender, race, creed, sexual preference or any other label that naysayers might reach for.

Providing these opportunities will go a long way toward meeting the need for STEM skills, because such groups continue to be markedly underrepresented in STEM fields.

“The good news is we are making progress,” Mink said. “We’re doing all the right things. We’re partnering with the right groups because we know we can’t do it alone, and I don’t think we are. If we continue doing everything we’ve been doing, then we will get there.”

Part of that solution comes from successful people turning around and giving support to the next generation coming up. Another part comes from young women realizing that they can, indeed, overcome the obstacles they face. Mink, and all that she has accomplished in spite of the obstacles, is proof that this solution works.



Dow's Kim Ann Mink

“Having determination and resilience is just as important as having the capability. Believe in yourself and never let go of your goals,” Mink said. “Never give up.” ■

