



RACHEL CLAUSEN

A high school biology teacher is cultivating the next generation of environmentalists

During her undergraduate studies at Franklin & Marshall College, Rachel supported three biology classes as a laboratory teaching assistant. In this role, she found that she truly enjoyed sharing her enthusiasm about the subject with other students. "I liked the challenge of making something 'boring' seem cool," Rachel added. In need of resources designed to support science teachers, she successfully applied for a 2010 KSTF Teaching Fellowship.

During her first year at Robert E. Lee High School, Rachel learned that the school was interested in expanding its International Baccalaureate (IB) offerings. She eagerly volunteered to teach the new course. Now in its third year, she teaches three sections of IB Environmental Systems and Societies, which is maxed out at 28 students per course. Rachel teaches the course with stewardship for the Chesapeake Bay as a theme.

In fall 2013, she was awarded one of 75 Good Neighbor Student Achievement Grants, sponsored by State Farm in partnership with Youth Service America. Rachel used the funds to take 13 students on a three-day trip to a residential education center on Port Isobel, a 250-acre island east of Tangier Island. While there, they learned about the importance of preserving natural resources by observing first-hand how pollution and unsustainable resource use affects the environment. Her students shared this invaluable knowledge with local elementary and middle school students at the school's Community Science Day.

Wanting to harness student interest in environmental stewardship following their trip, Rachel and another biology teacher started an environmental science club. Since its founding in May 2014, the club has grown to include nearly

Rachel Clausen

Biology & IB Environmental Systems and Societies Teacher, Robert E. Lee High School, Springfield, Virginia

- Biology Collaborative Team Lead
- Virginia Watershed Educator
- Founding Teacher, IB Environmental Systems and Societies
- Founder and co-sponsor, Environmental Science Club
- Presenter, 2013 National Association of Biology Teachers' Professional Development Conference
- Winner, Good Neighbor Student Achievement Grant
- Facilitator, Project WET (Water Education for Teachers)

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TEACHER PROFILE

100 members. Club members play a key role in managing the school's recycling program. Next, they hope to tackle grounds beautification and cleaning up a local creek.

Rachel sees value in partnering with other organizations to expose her students to as much "real science" as possible. For three years, she's worked with Virginia Tech and the Partnership for Research in Education with Plants (PREP) to bring in experts to speak with her students about mutant plants and how changes in DNA affect them. She's also taken her students to local wetlands to learn about biodiversity. "Through experiential learning, I'm showing my students that science can be interesting," she stated.

"I see technology as a means to deliver greater opportunities for student learning," stated Rachel. Two years ago, she adopted an inverted format for her upper-level courses. With flipped instruction, pre-recorded instruction is consumed outside of class and "homework" is done in class. The flipped format allows time for group work and applied activities that she was unable to squeeze in previously. Since flipping her class, she's found that her students have better attendance and are more engaged. As further evidence of its success, her students received the highest IB exam scores in the county during the 2013–2014 academic year.

Committed to improving how biology is taught at her school, she has held several leadership roles within the department. Rachel worked on aligning their ninth grade biology curriculum with state standards (Virginia Standards of Learning) and the IB Middle Year Programme standards, to help prepare students for later success in the IB Diploma Programme. For the last two years, she's led nine teachers as the biology collaborative team leader. Since taking the helm, the group has developed professional goals and incorporated active labs, inquiry and project-based learning.

"Rachel leads from the classroom by modeling great instructional practices and challenging the status quo. In her IB Environmental Science course, she ensures students connect their academic learning to the outside world by providing opportunities for service learning," said Heather

"As a Fellow, I've seen countless different examples of outstanding leading teachers. More importantly, I get to talk with them candidly about what makes them successful, and how they deal with failure too. This community inspires me to be better, each and every day."

Hotchkiss, Science Department Chair (and 2010 KSTF Teaching Fellow), Lee High School. "As the biology team leader, Rachel facilitated a collaborative reconstruction of the introductory biology course. The new course has clear overarching themes, and students have opportunities to build understanding of those themes through project-based learning."

"Being part of the KSTF community has played a key role in my growth as a professional teacher," she stated. "As a Fellow, I've seen countless different examples of outstanding leading teachers. More importantly, I get to talk with them candidly about what makes them successful, and how they deal with failure too. This community inspires me to be better, each and every day."

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