CELF
ENVIRONMENTAL LITERACY

WARWICK VALLEY:
Going for the Green

Nestled 60 miles northwest of New York City, the Warwick Valley Central School District straddles the rolling hills of the Appalachian trail, the picturesque lakes of the western Hudson Valley, and the storied black dirt farmland that shapes the area's thriving agricultural economy. Driving through Warwick and its surrounding hamlets, it is easy to understand why integrating sustainability into the school community has become a natural, organizing principle for the District. Even so, the level of comprehensive change that the Warwick Valley Central School District has undergone over the last five years has required impressive determination on the part of all involved. That determination has now been recognized nationally as the District has become the first in the state of New York to receive the U.S. Department of Education's Green Ribbon Schools Award, bestowed upon all four schools.

David Leach, Superintendent for the District, cites the passage of a Sustainability Policy by the Warwick Valley Board of Education in 2015 as a key turning point. While teachers and administrators had implemented isolated sustainability initiatives in certain classrooms and pockets of school campuses, the Board policy enabled and motivated the District leadership to take a more holistic approach to cultivating a culture of sustainability. James Yap, the Assistant Superintendent of Curriculum and Instructional Services, emphasizes how important it is to develop "the string that connects the pearls."

Today, that commitment to sustainability extends to campus infrastructure across four schools, the school community's dedication to environmental stewardship, and curricular connections to sustainability across all grade levels.

The investment in green infrastructure is immediately evident for any visitor arriving at Sanfordville Elementary school, the first of the campuses when approaching from the south. Stretched out in front of the school is 10 acres of a groundbreaking solar field. The installation, completed in February 2018, now generates 220,000 kwh of energy per month, and saves the district $200,000-$300,000 in electricity bills every year. Tim Holmes, the District's Asst. Superintendent of Business, insists that the District does not make any investment that is not fiscally responsible and highlights impressive cost savings in many of the initiatives they have undertaken.

While the investment in solar energy is expected to pay for itself within 12 years, the most significant shift in terms of cost savings has been the simple switch to LED lighting across all campuses. The substantial savings from that initiative has helped the District to make other investments where the financial returns may take longer to realize, but the environmental benefits are meaningful. For instance, the district switched from disposable styrofoam to reusable cafeteria trays and installed water bottle refilling stations in all schools contributing to a 50% reduction in waste across the District. Other infrastructure changes include the purchase of propane buses, a bus wash that recycles water, precision monitoring equipment and software to maximize energy efficiency in school buildings, a biodigester in the high school cafeteria, ample waste sorting stations through all schools, on-site composting in the elementary school, and the planting of a rain garden maintained by students to manage stormwater runoff to the nearby Waywayanda creek.

To ensure that the investments in sustainable infrastructure were part of a broader cultural shift in the school, the District partnered with the Children's Environmental Literacy Foundation on a two-year effort to train teachers to better integrate environmental literacy and sustainability into the curriculum. Through on-site support at all four schools in 2015-2016, combined with a three-day customized Summer Institute, CELF helped introduce EfS principles and practices to teachers across all grade levels. The work with CELF involved identifying local environmental assets, identifying curriculum units that lend themselves readily to a sustainability lens, identifying issues of greatest interest to the local community (eg solar energy, food systems and historical context), and developing place, project and problem-based learning units based on what they were already teaching.

Today, Education for Sustainability is evident in multiple facets of school curricula. On the one hand, every single Warwick Valley 8th grader is required to complete 20 weeks of sustainability education in courses specifically designed to that end which include Energy and the Environment and Green Architecture. All schools engage in exploratory learning with field trips at the elementary schools, middle school, and high school to places like the local wastewater treatment facility, the landfill, the black dirt farms, and the local power plant. Each school also has its own student-led Green Team which implement a range of projects. At the elementary level, the Green Teams collect classroom compost bins and maintain school gardens. The Middle School Green Team has worked on refurbishing furniture in the faculty lounge and guidance office.

While many schools have incorporated school gardens into their lesson plans, and Warwick Valley schools are no exception, teachers go well beyond the garden to integrate sustainability into the curriculum. For instance, last spring, first graders were introduced to their new STEM unit on agricultural engineers through a play put on by Kitty Lowry's class. While many elementary students learn the life cycle of an apple - from seed to tree to fruit and back to seed -

Mrs. Lowry's class took a more holistic approach to the lesson. Through role play, they learned about the apple tree, the insects, the farmer, the agricultural engineer, and the consumer - all of whom have interconnected involvement in the growth of an apple. Through dance and song the students touched on many of the Big Ideas of Sustainability including systems, interdependence, limits, diversity, long term effects and community.

STEM classes at both elementary schools incorporate project-based learning units that teach through a lens of sustainability connected to real world problems. Amanda Melican is the STEM coordinator at Park Avenue Elementary School and attended the CELF Summer Institute. Her role is to develop the units and support teachers with the implementation process, a valuable service when integrating more complex and innovative units. The first year she teaches the unit in the classroom, the second year she co-teaches alongside the teacher, and the third year she fully hands off the unit to the classroom teacher and provides support when needed. She observes that the real-

-world based units are more stimulating and motivating for students, “It takes a lot more planning in the beginning to plan out this large, project-based unit, but I think that the impact on the student experience is much greater.” Her projects begin with a challenge question such as “How can we prevent wind and water erosion from hurting our environment?” The students then explore different elements of the question - water, wind, soil - to develop their content knowledge. They end the unit with a performance task which addresses the problem they have identified. In this case, they may build a structure to prevent erosion. “They’re learning how to cooperate with others, they’re problem solving, they’re thinking critically through these processes, so I think that the end goal, the end product, is fantastic.”

David Leach, the Superintendent for the District, highlights the value of increased student motivation when integrating sustainability into the curriculum, “We are preparing students for their future, not our past. This generation wants to be environmental stewards...They are concerned

about their future. They’re concerned about the planet. So that serves as a really meaningful context and motivator for students. I think it’s very worthwhile. When we design curriculum or we design learning opportunities and activities for students, we want them to be meaningful, empowering. You know, the typical kindergartner comes to school and they’re excited and they want to learn. We want that same level of energy when students become adolescents and move through high school. And this type of authentic, project-based learning opportunities that come about in the rich discussions regarding our environment with students serves as a wonderful springboard for that.”

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DAVID LEACH
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DISTRICT