U.S. DEPARTMENT OF EDUCATION

GreenRibbonSchools

School Nominee Presentation Form

ELIGIBILITY CERTIFICATIONS

School and District's Certifications

The signatures of the school principal and district superintendent (or equivalents) on the next page certify that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of their knowledge. *In no case is a private school required to make any certification with regard to the public school district in which it is located.*

1. The school has some configuration that includes grades early learning to 12.
2. The school has been evaluated and selected from among schools within the Nominating Authority's jurisdiction, based on high achievement in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental and sustainability education.
3. Neither the nominated public school nor its public school district is refusing the U.S. Department of Education Office of Civil Rights (OCR) access to information necessary to investigate a civil rights complaint or to conduct a district wide compliance review. The Department of Defense Education Activity (DoDEA) is not subject to the jurisdiction of OCR. The nominated DoDEA schools, however, are subject to and in compliance with statutory and regulatory requirements to comply with Federal civil rights laws.
4. OCR has not issued a violation letter of findings to the public school district concluding that the nominated public school or the public school district as a whole has violated one or more of the civil rights statutes. A violation letter of findings will not be considered outstanding if OCR has accepted a corrective action plan to remedy the violation.
5. The U.S. Department of Justice does not have a pending suit alleging that the public school or the public school district as a whole has violated one or more of the civil rights statutes or the Constitution's equal protection clause.
6. There are no findings of violations of the Individuals with Disabilities Education Act in a U.S. Department of Education monitoring report that apply to the public school or public school district in question; or if there are such findings, the state or public school district has corrected, or agreed to correct, the findings.
7. The school meets all applicable federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

U.S. Department of Education Green Ribbon Schools

Name of Principal: Mr. Timothy D. Maclure
(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in the official records)

Official School Name: Charles H. Barrows STEM Academy
(As it should appear on an award)

**Private Schools: If the information requested is not applicable, write N/A in the space*

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.

Date: 12/16/21

(Principal's Signature)

Name of Superintendent: Dr. Tracy A. Youngberg
(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in official records)

District Name: Windham School District

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.

(Superintendent's Signature) Date: 12/16/21

Nominating Authority's Certifications

The signature by the Nominating Authority on this page certifies that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of the Authority's knowledge.

1. The school has some configuration that includes grades Pre-K-12.
2. The school is one of those overseen by the Nominating Authority which is highest achieving in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental and sustainability education.
3. The school meets all applicable federal civil rights and federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

Name of Nominating Agency: Connecticut Outdoor & Environmental Education Association (COEEA)

Name of Nominating Authority: Ms. Abby Peklo
(Specify: Ms., Miss, Mrs., Dr., Mr., Other)

I have reviewed the information in this application and certify to the best of my knowledge that the school meets the provisions above.

(Nominating Authority's Signature) Date: 12/16/21

SUBMISSION

The nomination package, including the signed certifications, narrative summary, documentation of evaluation in the three Pillars, and photos should be submitted online according to the instructions in the Nominee Submission Procedure.

OMB Control Number: 1860-0509
Expiration Date: December 31, 2023

Public Burden Statement

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is 1860-0509. Public reporting burden for this collection of information is estimated to average 37 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond to this collection is required to obtain or retain benefit P.L. 107-110, Sec. 501, Innovative Programs and Parental Choice Provisions. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, 400 Maryland Ave., SW, Washington, DC 20202-4536 or email ICDocketMgr@ed.gov and reference the OMB Control Number 1860-0509. Note: Please do not return the completed ED-Green Ribbon Schools application to this address.

U.S. DEPARTMENT OF EDUCATION
GreenRibbonSchools

Nominee Information
School, District, or Postsecondary Institution Name: Charles H. Barrows STEM Academy
Category of Nomination (School, District, or Postsecondary): School

Address: 141 Tuckie Road City: North Windham State: CT Zip: 06256 Twitter: n/a
Facebook: Charles H. Barrows STEM Academy

Top official (School=Principal; District=Superintendent; IHE= President): Title (Mr./Ms./Mrs./ Dr.): Mr.
First Name: Timothy Last Name: Maclure Position/Role (Principal/ Superintendent/ President): Principal
Email: tmaclure@windham.k12.ct.us Phone: 860-465-2610 ext. 4690

Lead Applicant (if different) Title (Mr./Ms./Mrs./ Dr.): Mr. First Name: Robert Last Name: Kallajian
Position/Role (Teacher/ Sustainability Director/ Facilities Director): Assistant Principal
Email: rkallajian@windham.k12.ct.us Phone: 860-465-2610 ext. 4693

Check all that apply:

Early Learning ☐	Charter ☐	Community College ☐
Elementary ☑	Magnet ☑	Career and Technical ☐
Middle ☑	Non-Public ☐	Urban ☑
High ☐	Two-Year ☐	Rural ☑
Public ☑	Four-Year ☐	Suburban ☐

Provide percentages, if any are relevant to your school, district, or institution:
Pell Recipients: N/A
Free and Reduced Price Lunch: 100%
Minority: 54%
Limited English Proficient: 13%
Special Education: 9%
Graduation Rate: 100%
Attendance Rate: 96%

Provide the following:

Total Enrolled: 560 Number of Schools: 1 Buildings:1 Campuses: 1

Summary Narrative: An Overview of Our Work Encompassing All Three Pillars

It has been almost a decade since the Town of Windham, Connecticut, a group of forward-thinking engineers, and a construction firm broke ground on what is now **Charles H. Barrows STEM Academy**. In 2014, both the architect and the design firm won architectural awards for the environmental sustainability aspects of the building's design. The goal from the very beginning was to design and build a green school that focused on sustainability attributes, create bio-contributive landscaping with native plantings and schoolyard habitats, and embed eco-friendly outdoor spaces conducive to outdoor learning and environmental education. This intentional design, construction, and implementation aligned with our Core Mission, which is for students to engage in the rigorous integration of Science, Technology, Engineering, and Mathematics through student-directed inquiry and project-based learning. Barrows inspires students to become critical thinkers who analyze connections across disciplines, investigate complex questions, and persevere to solve authentic local and global challenges. By fostering positive relationships with our community partners, students are more prepared and inspired to pursue STEM careers of the future.

Over the last seven years, **Charles H. Barrows STEM Academy** has upheld its original mission. Through the school's physical infrastructure and our daily human endeavors, we have maintained a green, sustainable school as we continue to demonstrate progress in the three Pillars of Connecticut Green LEAF and National Green Ribbon Schools.

Charles H Barrows STEM Academy became a Connecticut Green Leaf School during the first year that it opened. During this inaugural year, we worked hard to achieve a National Wildlife Habitat certification for our school grounds. We also became a Monarch Way Station registered school for our inclusion of butterfly friendly gardening and pollinator pathways.

Our K-8 school includes intentionally designed outdoor spaces to increase the amount of time that students spend learning and playing outdoors. There are two outdoor classrooms that can accommodate diverse learning arrangements from traditional seating areas to natural expanses for exploration. The dry riverbed, storm swales, ponds, and meadows were sensitively preserved to become essential elements of school property. Our school gardens offer both sensory pauses and an authentic connection to the environment. We encourage students to "forest bathe" as they walk the trails around the school and through different biomes, whether it's during a class field study, recess, afterschool programming, or the annual Bioblitz.

5th graders engaged in outdoor inquiry

As the school continues to take shape, teachers and other staff learn new ways to ensure effective environmental education and sustainability education. We have expanded collaborations within the surrounding communities and have partnered with local businesses, experts, universities, and families in an ongoing effort to provide relevant and engaging environmental education and sustainability education. Our community partnerships have had meaningful impacts on our students. Examples of this include judges who provide valuable student feedback at the Connecticut Invention Convention (*where all 540 students participates*), land conservation guides who demonstrate how to remove invasive species on school grounds, or generous donors who help pay for technology and other equipment that keep us an exemplary, state of the art STEM school.

We are particularly proud of two school-wide curricular initiatives in engineering and agriculture that align with effective environmental and sustainability education. With a focus on problem solving within the context of real-world phenomena, our students learn engineering cycles and come to understand that failure is an essential part of discovering a solution and that authentic learning happens when things go wrong. Using the outdoors as learning labs, from growing window box seeds to managing outdoor gardens to cutting edge aqua and hydroponic agriculture,

inquiry and trial and error are embedded in learning. Encouraging inquiry and discovery to gain insights and answers offers our students the opportunity to understand process as much as product.

As we look back at these first seven years, we know that we are at a good point to reexamine our original mission with a critical eye towards our future. Our goal now is to look beyond what we have accomplished to ensure *mindful growth* to achieve deeper sustainability within the three Pillars. The collaborative process of completing this application has affirmed our belief that we are ready to achieve Green Ribbon status. The application process has been a positive start towards establishing teams that include *new* teachers, staff, parents, and students who can continue the conversation and implement actions that benefit the environment, improve health and wellness of students and staff, and ensure effective environmental and sustainability education.

Newsweek recently recognized Barrows as a top performing school – in the top 30% of all schools across the country. U.S. News & World Report also recognized Barrows as one of the top 20% of schools across the country. In Connecticut, Barrows was recognized as the #4 magnet school in the state. We are proud of these rankings, which demonstrate a combination of academic achievement as measured on standardized tests, graduation rates, and how well students are prepared for high school.

Narrative for Pillar 1: Reduce Environmental Impact and Costs

Charles H. Barrows STEM Academy was built in 2013. From the beginning, it was designed to be environmentally sensitive, Biophilic, sustainable, and supportive of environmental education and sustainability education. The architect was intentional about creating natural transitions between the surrounding natural habitats and the learning that would happen at the school. Floor to ceiling windows draw the surrounding environs into the classroom as much as they draw the student's and teacher's eye outward to the natural world. It is common for teaching to pause so that students may observe a Grey Tree Frog climbing on a window, a Praying Mantis ambling along a sill, monarch butterflies alighting on bushes in thesensory garden, or even a Red-Tailed Hawk landing on a dry bed fence in search of prey. Our grounds are National Wildlife habitat certified as well as Monarch Waystation registered.

Light Well in kindergarten wing

Light Wells, strategically placed, ensure the presence of natural light, reducing the need and environmental impact of electrical lighting. Light shelves reflect sunrays, further reducing the need for electrical lighting. The shelves capture and reflect light into classrooms even when the sun is overhead and not directly shining into classrooms. Additionally, the school has replaced all fluorescent lighting with LED lights, a highly efficient full spectrum lighting.

Light Shelf outside 7th/8th grade wing

These lights are programmed to be off in hallways and stairwells when no one is present. They automatically shut off schoolwide daily from 11pm to 6am, with additional calendar programming to on no-school days, weekends, and holidays, to further decrease the demand on electricity. In most instances throughout the year, the use of the overhead lights is limited in most classrooms by teachers as the natural light flooding into the rooms is more than sufficient and preferred by students.

Other schoolwide efforts to reduce environmental impacts and costs include installation of a wind turbine, photovoltaic cells on the roof, and solar water heaters to meet most hot water demand. These green technologies offset our reliance on the power grid. All hot water in the building is heated by solar energy and stored in large water tanks in the facilities room. A secondary water tank circulates hot water through electric coils and maintains water temperature at its needed setting. These are powered by the photovoltaiccells located on the roof. The wind turbine, while low in energy production, serves as a powerful instructional tool. Students learn firsthand about alternative energy generation from renewable energy sources. In fact, the school's energy dashboard is considered a valuable teaching tool, and teachers are greatly encouraged to access quantitative data to help students explore alternative energy sources and learn more deeply about energy conservation.

We address food waste in a two-fold approach that includes composting and a food share program to benefit students facing food insecurity. Unwanted packaged food such as yogurt, cheese sticks, milk cartons, and muffins are cleaned and stored in a glass front refrigerator that was donated for this purpose by the U.S. Coast Guard Long Island Sector. All K-8 students at school can access this food that would otherwise be disposed of. Younger grades are offered snacks in classrooms. Middle school students have access during their WIN (*What I Need* intervention/ support time).

7th graders assembling wheelbarrows

Except during the two COVID impacted years, non-reusable food waste is collected for composting during food waves in the cafeteria. What started as a 7th grade initiative grew to include 8th grade, and as such, composting has been integrated into the 7th and 8th grade curricula. Composted material is used to supplement the soil in the raised garden beds at school. It is also used as instructional material for the K-8 agricultural components of our STEM curriculum.

Barrows follows best practices for Recycling and has Single Stream containers located throughout the school to collect cardboard, paper, plastics #1-7, magazines, junk mail, plastic bottles and cans. We regularly remind students and staff to use the recycling bins responsibly. We are currently investigating the use of consumer level recycling machinery to shred single use plastics and extrude them as 3d filament. Considerations include identifying space with appropriate ventilation.

There are systems in place to minimize water waste at Barrows. All faucets and toilets are low flush and automatic. Each toilet flush uses approximately 1.3 liters of water compared to the standard toilet water consumption of 1.6 liters. This results in significant daily savings for the school. The urinals are all no-flush that eliminates the need for water supply lines.

To encourage energy efficient vehicles, Barrows designates specific parking spaces for low or zero emission vehicles.

As part of its intentional building design to support sustainability, all Barrows systems are monitored through a TRANE computer system. These are visible through a user-friendly dashboard that all school personnel have access to. Being able to see usage and generation is an excellent and real-world teaching tool for students to investigate the movement of energy through systems, which is a core concept of Next Generation Science Standards (NGSS).

Research has shown that proper ventilation and good air quality improves test scores and academic achievement while reducing absenteeism. We believe this holds true at Barrows, and we have taken several steps to ensure proper ventilation and good air quality. The school's computerized control system monitors air quality throughout the building. It introduces outside fresh air to ensure that interior air is optimal for the health of students and staff. This system ensures that students are accessing oxygen-rich air all day long, from beginning to end of day. To support good air quality, we have installed a state-of-the-art Aerogation Green Wall, donated by AgroSci Inc., an innovative Connecticut company whose focus is to use plants to connect people to nature. This wall that you will read about more later, has the capacity to remediate toxins, impurities, allergens, and odors. This patented technology magnifies the natural purifying properties of plants 200 times. The Green Wall utilizes the natural processes of photosynthesis and plant respiration coupled with the biological properties of microbes in the soil. It has the cleaning capacity of 16,000 houseplants, further improving air quality within the school. Due to its success at improving air quality, Barrows is purchasing an additional 30-plant rolling system to double the capacity currently within our building.

Green Wall, hydroponic towers, and planters

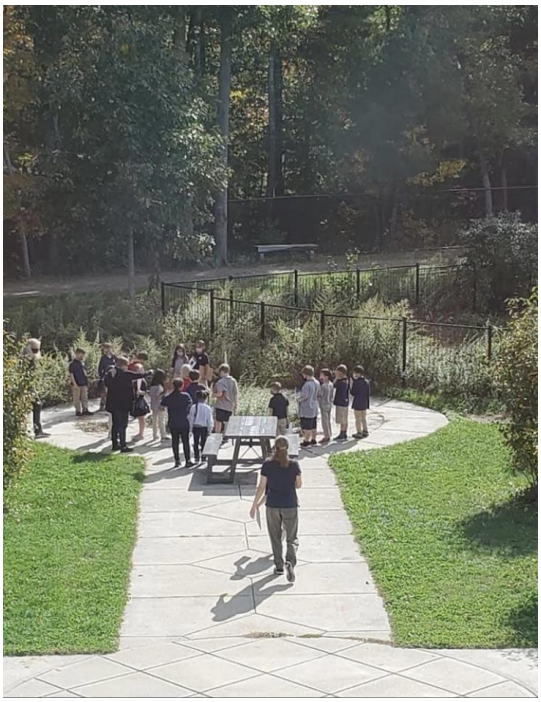
Storm water management is often overlooked as an environmental hazard. Ineffective systems can cause local flooding, and can transfer pollutants, trash, and other unintended particles into surrounding watersheds.

Charles H. Barrows STEM Academy has an architecturally designed storm water management system that begins on the roof. Storm waters funnel down as rain chains that offer beautiful

waterfall cascades highly visible from our floor-to-ceiling windows. The water is then channeled through a dry riverbed in our courtyard where wetland plants filter excess nutrients and pollutants in the water. This water flows through the riverbed into stormwater swales where plants can absorb nutrients and the water begins to percolate into the ground. Water also travels around the edges of our soccer field and ends at a standing pond at the far end of this field. Stormwater swales in the front of the building are seeded with Lupines and other wildflowers serving as rain gardens to further ensure water filtration and reduce soil erosion. The surrounding areas outside the building are planted with native ornamental grasses and sedges which are optimal for rain gardens and whose roots help prevent erosion. This, in the long term, delays and prevents damage to the school's foundation from water that would otherwise pool here.

Narrative for Pillar 2: Improving Health and Wellness of Students and Staff

Improving Health and Wellness for Students and Teachers focuses on connecting individuals to nature and using indoor and outdoor spaces for non-competitive fitness and wellness activities accessible to those of all physical abilities. Natural sunlight provides an evidence-based health attribute throughout the school. The school's biophilic architecture brings the outside in, greatly contributing to the health and wellness of students and staff. The numerous lightwells and shelving on both the inner and outer structures radiate our classrooms with sunlight and positive energy. All classrooms have a south-facing wall of windows to maximize natural light. All student common spaces face the surrounding landscape. This landscape includes a nature path that surrounds the entire building, which allows students and staff of all abilities to engage in non-competitive fitness activities of walking and jogging. There is a sensory garden that staff and students frequent during and after school. The sensory garden's visual appeal, multiple textures, and botanical aromas create a relaxing and meditative natural space for all to



4th graders hold a class meeting at the sundial by the sensory garden

enjoy. The sensory garden has become an important space for reducing stress among students and staff. Some of our middle school students and teachers share the responsibility for tending the sensory garden as an afterschool activity. They understand that, if it is to be enjoyed as a place for health and wellness, this special garden needs regular attention to grow and thrive.

Each year, we have BioBlitz days when students go outside with their classes to explore the ponds, nature paths, sundials, gardens, and monarch waystation and collect data about different species. BioBlitz is a statewide collaborative program organized by scientists from the University of Connecticut and other organizations designed to see how many species in individuals can count as part of a time-limited biological survey. BioBlitz has become a very popular way for schools across the state to engage students in citizen science and share what they discover about the diversity of species on their grounds. Barrows school grounds are National Wildlife Habitat certified where box turtles,butterflies, and various frog species are just some of the wildlife we encounter when researching, exploring, and investigating. Staff and students regularly enjoy using appealing outdoor picnic tables placed throughout the property. Outdoor classrooms whose design resembles that of ancient Greek amphitheaters enhance a sense of wellness while students learn.

We are the only public school in Connecticut to boast an Aerogation Green Wall. With an air remediation effectiveness of 16,000 house plants, this Green Wall has greatly contributed to the improved health and wellness of all who spend their days at the school. Students take pride in this innovative green technology and enjoy taking turns tending it during the school day.

4th graders releases Monarch butterfly

Students exercise in the weight/sensory room

Indoor spaces also contribute to improving health and wellness of students and staff. There is radiant flooring in kindergarten and first grade classrooms, as well as in all resource rooms. Younger students often spend time on the floor for learning circles, group time, reading, naps, and other activities. Radiant heating, an energy efficient heating system designed to maintain comfortable floor temperature, encourages students (especially younger students) to gather and work informally on the floor.

The entire school has an HVAC system that utilizes MERV 13 filters. Filters rated as MERV 13-16 are suitable for use in general surgical facilities, as they filter micron sizes from 0.3 to 1, including bacteria, pollen, and mold. These high efficiency filters ensure the school has optimal air quality for all students regardless of their medical needs. This system, paired with our green wall leaves little doubt that our air quality is optimal for students to spend an entire day in.

All cleaning products conform to Green LEAF standards and are safe and non-toxic to the environment. We use BurnOut, a 100% biodegradable pesticide that is safe to use around people and animals and non-toxic to the environment.

Barrows has a full-service health center sponsored by Windham Hospital. This includes a full-time nurse practitioner, full-time social worker, and full-time family liaison. Students can quickly access physical and mental health support services right at school. Our Behavioral Tutor, additional social workers, and school guidance counselor provide additional support for students and their families. Physical and mental health supportive services are also available to teachers and other school staff.

Equity and inclusion of all students, regardless of abilities or lived experiences, is evident throughout the classrooms. For example, fitness and wellness includes many options for personal performance over competitive team sports, including a climbing wall, weightlifting equipment,

and treadmills. Another example of inclusion is that all classrooms have an audio articulation system that provides a clarity of audio messages from the teacher to the students at any point in the room. Audio induction loop systems in both the gym and cafeteria support students/visitors with hearing impairments/ hearing aids, allowing them to get a personal signal from the PA system in those locations. In additional to outdoor and indoor health and wellness spaces and offerings, Barrows seeks to help improve the health and wellness of students and staff by offering regular STEM Exploration *choices* as an effective strategy to spark interest in learning and promote personal growth. Choices might include exploring STEM careers, playing stock market simulation games, sports statistics simulations, or discovering how STEM supports the music and fashion industry. STEM Exploration demonstrates that STEM is a critical 21st century phenomenon that we experience every day in ordinary ways.

To improve the health and wellness of students and staff, Barrows implements a whole child approach to learning. As such, we focus on Social Emotional Learning (SEL), including providing professional development to teachers, counselors, and other staff who then integrate SEL into their classroom curricula. We also strongly encourage students and teachers to stay involved in the school's afterschool clubs to encourage peer and student-teacher socializing, including Literary Magazine Club, Drama Club, Games Club, Student Council, and Diversity Club. We support frequent celebrations and other gatherings throughout the year to encourage socialization outside of academic work. For example, 7th grade students plan and host an 8th grade Celebration Night before they graduate from our school. During COVID our teachers hosted a weekly Virtual Trivia Night to help students stay socially connected with one another.

Narrative for Pillar 3: Effective Environmental and Sustainable Education

Environmental and Sustainable Education is cross-curricular and blended into NGSS. We approach our STEM curriculum from an inquiry perspective. Teachers create situations where students ask questions and seek answers through investigation, observation, and experimentation. All grades in our school look deeply into the environment and sustainable practices with an intentional focus of empowering our students to understand, manage, and positively impact the world they live in. Outdoor learning occurs regularly, using intentionally designed grounds for nature as classroom. Students learn science "in the field." Project-based learning provides a real-world context for learning STEM, both outdoor and in classrooms. Effective Environmental and

Sustainable Education unfold in specialized labs and classrooms, outdoor classrooms, raised garden beds, courtyards, walking paths, meadow, marsh area, wetland, and wooded temperate forest. Barrows Oceanography Room, for example, boasts saltwater and freshwater tanks that are home to red eared sliders, clown fish, fox face rabbitfish, a brown tang, cleaner shrimp, Gobi, hermit crabs, snails, crayfish, and a variety of freshwater native fish. The Project Science Room is a unique science classroom where students engage in messy experiments with soil and water, erosion, deposition, dissections, and other investigations that require space and access to water. Our most recent endeavor, still a work in progress, is a new 160 square foot greenhouse, where we can extend gardening and agricultural learning during colder months.

For their capstone project, our oldest students (8^{th} graders) choose one of the United Nations' 17 Sustainable Development Goals to explore and research. As part of their cumulative Environmental and Sustainable Education, students identify a specific problem, articulate the goal, and evaluate the most viable solutions. Students demonstrate their work through a Problem Essay, Solution Essay, and presentation to members of the school community, school board, and community partners. This capstone project demonstrates students' learned capacity to problem solve, communicate effectively, and demonstrate the complexities of long-term environmental and sustainability issues that impact humans.

Last year, Barrows embarked on a journey to incorporate Urban Farming as a component of our middle school curriculum. Living and learning in a community where many families have limited means for growing fresh nutritious food, the Urban Farming initiative explores strategies for growing food where there is very limited garden space, such as by supplementing garden space indoors for home-made aquaponic systems. For this, we partner with experts from the University of Connecticut Plant Science/4H Extension as well as local business partners AgroSci Inc. and local retailer Burnett's Gardens who have donated materials to support our student agricultural education

learning. Currently, 7th and 8th grade students are engaged in exploring growing hydroponic potatoes, strawberries, leeks, onions, and leafy greens.

Our school received a national grant from VOYA International to support our schoolwide Urban Farming curriculum that focuses on agriculture education. Through this grant funding, we can replenish our raised garden beds, install a new greenhouse, and add rain barrels on our property. All of these features enhance our schoolwide Environmental and Sustainability Education. Grade 5 students, for example, are engaged in a sustainability project focused on the rain barrels, in partnership with Connecticut's Project Oceanography (Project O), through their NOAA B-WET grant. Environmental and sustainability education are rolled into the curriculum at all grade levels at Barrows, as early as Kindergarten. Students use outdoor learning spaces to observe natural phenomenon and question how the environment is impacted by the living organisms that call our schoolgrounds home. We teach young children that they can make a difference in their environment. Through their engagement in the school's STEM projects, students discover how they and others can reduce human impact on the environment. As our students move through their elementary years, we empower them to continue to help solve environmental and sustainability challenges and problems for their own wellbeing and for the future of their communities.

Student using microscope in Project Science classroom

Environmental and sustainability education, such as Urban Farming, focuses on problem-solving strategies and project-based learning. A commitment to Environmental and sustainability education throughout each grade level enables students to build capacity for actions and behaviors that positively impact the environment. For example, we use data collected at our annual BioBlitz as a learning resource. As a citizen science project, BioBlitz is a biological study within a given timeframe to monitor the variety of life and biodiversity within our school ground ecosystems. Our pond habitats for frogs, seasonal birds, and a host of semi-aquatic plants provides habitat

education for our students and intentional areas of observation, including observation at our annual BioBlitz participation.

Barrows student engagement in Environmental and Sustainability Education is demonstrated each year as they showcase their learning and accomplishments in annual STEM competitions, such as Invention Convention, United States Super STEM Competition, Science Olympiad, Odyssey of the Mind, First Lego League and JASON Recycling Project. Our students have received national recognition in both Invention Convention and United States Super STEM Competitions. These competitions serve as opportunities for students to engage in problem solving beyond school walls and further promote the concept of solving authentic real-world problems. Rather than relying on classroom simulations, our students use *nature as classroom* for authentic learning. Once students reach middle school, they are much more comfortable with the iterative process of engineering.

7th graders weeding invasive Mugwort