



2014-2015 School Nominee Presentation Form

ELIGIBILITY CERTIFICATIONS

U.S. Department of Education Green Ribbon Schools 2014-2015

Charter Title I Magnet Private Independent

Name of Principal: Mr. Thomas Glennon

(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in the official records)

Official School Name: Linden Hill Elementary School

(As it should appear on an award)

Official School Name Mailing Address: 3415 Skyline Drive

Wilmington, DE 19808

(If address is P.O. Box, also include street address.)

County: New Castle State School Code Number *:250

Telephone: 302-454-3406 Fax: 302-454-3549

Web site/URL: www.edline.net/pages/rcLindenHill E-mail: thomas.glennon@redclay.k12.de.us

**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: 1/29/2015

(Principal's Signature)

Name of Superintendent: Dr. Melvin Daugherty

(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in official records)

District Name: Red Clay School District

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

Date: 1/29/2015

(Superintendent's Signature)



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: Delaware Department of Education

Name of Nominating Authority: Mrs. Tonyea Mead
(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.

Tonyea Mead

Date:1/29/2015

(Nominating Authority’s Signature)

SUMMARY AND DOCUMENTATION OF NOMINEE’S ACHIEVEMENTS

Provide a coherent "snapshot" that describes how your school is representative of your jurisdiction’s highest achieving green school efforts. Summarize your strengths and accomplishments in all three Pillars and nine Elements. Then, include documentation and concrete examples for work in every Pillar and Element.

SUBMISSION

The nomination package, including the signed certifications and documentation of evaluation in the three Pillars should be converted to a PDF file and emailed to green.ribbon.schools@ed.gov according to the instructions in the Nominee Submission Procedure.

OMB Control Number: 1860-0509
Expiration Date: February 28, 2015

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.



1. School Profile

School Name: Linden Hill Elementary School

Street Address: 3415 Skyline Drive

City: Wilmington

State: DE

Zip: 19808

School Website: <http://www.edline.net/pages/rcLindenHill>

Principal Name: Thomas Glennon

Principal Email Address: Thomas.Glennon@redclay.k12.de.us

Principal Phone Number: 302-454-3406

Total school enrollment (Fall 2014): 840

District Name: Red Clay Consolidated School District

School type and demographics:

2. Application Team Information

Lead Applicant Name (who prepared the application): Nathan Palkovitz

Lead Applicant Title (e.g., teacher, principal): Assistant Principal

Lead Applicant Email: Nathan.Palkovitz@redclay.k12.de.us

Lead Applicant Phone Number: (302) 454-3406

Application Team Members (Others who helped prepare this application)

	Name (First and Last)	Title/Department
1	Michelle Aurand	Third Grade Teacher
2	Yanaka Bernal	Technology Teacher
3	Janet Huckleberry	TAG Teacher
4	Christine Lim	Fourth Grade Teacher



3. Summary Narrative

(NOTE: This is the 800 word summary that will be used to describe your school's programs and efforts towards the three pillars. If selected for an award it will be used in press releases and other outreach materials. You may want to return to this question after answering the remaining questions below.)

Summarize the school's efforts in all three pillars. Focus on your commitment and progress towards meeting Green Ribbon School criteria, especially:

- Partnerships or memberships the school has developed to meet your green goals
- The people, including any student team, involved in your Green School efforts
- Your progress thus far, including results and benefits
- The plan to sustain your work

(Maximum 800 words)

Linden Hill Elementary School is committed to the Green Ribbon Pillars on a daily basis. Staff and students collaborate to improve environmental and sustainability education, activities, and planning within our school community.

Our Green Team meets monthly to discuss progress on the three Pillars, troubleshoot obstacles, and brainstorm next steps. This committed group of approximately 12 staff members, including homeroom teachers, related arts teachers, and administration, is dedicated to incorporating Green principles in the education of all students and the functioning of the school building, with both short-term and long-term goals and projects.

Each Green Ribbon Pillar has been discussed at length by the Green Team. Pillar I projects include recycling--both through the Red Clay School District's single-stream collection, and also materials and products not currently accepted by the district-sponsored single stream recycling program (including batteries, ink cartridges, etc.); working with administrative and custodial staff to insure fidelity to recycling programs and proper disposal of recyclable and non-recyclable waste; cooperation with district staff in complying with programs and initiatives to reduce water and electricity, including use of low-flow plumbing fixtures and motion-activated lighting. Pillar II addresses the health and wellness of staff and students. Students are educated on the importance of taking good care of their health, including making positive choices about diet and exercise. They receive opportunities to eat healthy meals in the cafeteria; benefit from district wellness policies limiting sugary foods and defining healthy snacks; and celebrate birthdays and holidays in class without food. Physical activity is emphasized not only in physical education lessons (where instruction focuses on taking responsibility for healthy lifestyles) and activities, but also in 30 minutes of recess daily as well as "brain breaks," "Take 10" and other classroom-based programs that emphasize movement. Staff benefit from a Pillar II focus through



such opportunities as organized exercise challenges and competitions, and informal and formal groups that exercise together. Pillar III is the area in which the Linden Hill community has shown the most growth this year. Effective environmental and sustainability education occurs in homerooms, related arts classes, and after-school and extracurricular activities throughout the school year. The Green Team has organized Green Lessons and shared them with all teachers for use in homerooms on every Pride Day (the first Friday of each month, when school spirit and community values are celebrated). Additionally, every student from K-5 is exposed to Green Lessons in their related arts classes throughout their elementary school experience. This year there is growing momentum around Green-themed clubs, including the recycling squad, garden club, and composting.

Our progress to date has been exciting; staff and students share a sense of accomplishment with past and present success, as well as a sense of urgency to continue improving our environmental and sustainability education and practices. A number of successes worth celebrating include student-driven recycling, composting, gardening, and tree plantings. Areas for continued progress include increasing fidelity to recycling programs, broader participation in the composting program, and more student leadership in home- and community-based green projects.

Long-term partnerships have been limited to date. However, the current Green Team has initiated an application for to participate in the Delaware Pathways to Green Schools 2015 partnership with the Delaware Valley Green Building Council (DVGBC), and is looking forward to active participation in their programs next year. Additionally, Linden Hill has just joined Eco Schools USA. The TAG teacher is currently organizing student clubs to participate in Eco Schools programs and lead school-wide initiatives.

Various recycling programs over the years exemplify the growth of Green awareness and efforts at Linden Hill. Before the school district supported single stream recycling in all schools, Linden Hill staff and students explored options for the school and formed partnerships to facilitate recycling. These included recycling milk bottles with Terracycle, recycling paper with Abitibi Paper Retriever; recycling batteries and ink cartridges through local drop-off programs (facilitated by student collection teams and teacher delivery), and recycling plastic bottles and cans through student collection and teacher drop-off at local recycling collection points. The student "Recycling Squad" was made up of model students from classrooms across grade levels, who not only collected recyclables, but they also patrolled the school, posting reminders to staff and students to recycle, and issuing tickets when they found recyclables in the trash collection containers, or trash in recycling containers. This student buy-in and activism has improved staff participation in existing programs. As Linden Hill's Green focus broadens, and Green initiatives gain traction and momentum, we will continue to collaborate to empower students to learn about responsible citizenship in a global economy, incorporate best practices for environmental stewardship and sustainable living, and share the importance of these endeavors with the communities around them.



The Green Team takes seriously their efforts to increase awareness of and participation in Green activities. Plans to sustain these efforts are on-going, with commitments to increasing student participation and involvement, continual improvement, and growing impact locally and globally.

Crosscutting Questions: Awards and Programs

These two crosscutting questions are **10% of your overall score.**

4. Does your school participate in a local, state, or national green schools program (e.g., Eco Schools USA, Project Learning Tree Green Schools)?

Yes

No

If yes, which program(s) are you participating in, what level(s) are in progress, and what level(s) have you achieved?

	Program	Level in Progress	Level Achieved (include date achieved)
1	Delaware Pathways to Green Schools 2015	Application Submitted (Program begins March, 2015)	TBD
2	Eco Schools USA	Joined in January 2015	TBD
3			
4			
5			

5. In the past five years, has your school, staff, students or student groups received any awards for environmental stewardship, student and staff health and wellness, or environmental education/civic programs?



(√) Yes

() No

If yes, provide award details below.

	Award	Awarded to	Awarded by	Year Received
1	Energy Star	Linden Hill Elementary	EPA / Energy Star	2008, 2009, 2010, 2011, 2012, 2013, and 2014
2	Bronze Award, Healthier US Schools Challenge	School Nurse	Let's Move	2013

Pillar 1: Reduce environmental impact and costs

Pillar 1 includes four main elements and is **30%** of your overall score.

Element 1A: Energy conservation strategies

6. Which of the following programs or practices has your school implemented to conserve energy and to protect our environment from the negative effects of buildings and transportation? (Check all that apply)

Our school has an energy management plan in place that describes the steps we are taking, the key participants, our goals, and a schedule for conserving energy and reducing energy costs.

Our school participated in an energy efficiency program that resulted in a comprehensive energy audit and cost effective energy efficiency improvements.

Our school has met our energy conservation target every year since we started our program.

Our school energy use is tracked and benchmarked using EPA ENERGY STAR Portfolio Manager or an equivalent program.

Our school is EPA Energy Star certified this year.

5% or more of the energy used at our school is obtained from on-site or off-site renewable energy sources.

Our school was built or modernized to meet Leadership in Energy and Environmental Design (LEED), Green Globes, Living Building Challenge, or another green building standard.

Our school has a greenhouse gas emission reduction plan in place that targets energy use. We measure our annual progress against our reduction goal.



7. Use the list above as a guide to describe how your school programs, policies, and actions have reduced the amount of energy used in your building(s). Include data. Also include information about your efforts to protect our environment from greenhouse gas emissions, how you set your goals for reduction, and how you measure your progress. (Maximum 250 words)

Element 1A: Energy conservation strategies

Linden Hill Elementary School is a facility of the Red Clay Consolidated School District which has been an Energy Star Partner since 2007. During that time the school has qualified as an Energy Star Labeled building every year since 2008. While undergoing building additions and renovations in 2004 and currently preparing for additional major capital renovations, Linden Hill is going through a series of energy improvements as part of a Guaranteed Energy Savings Agreement (GESA) signed in April 2013 between the district and Seiberlich Trane as the Energy Services Company (ESCO). Following an Investment Grade Audit (IGA) to identify several Energy Conservation Measures (ECM's) were selected based on their potential for improving consumption at the building. Among the energy efficiency improvements selected was tightening the building envelope, upgrading lighting by replacing current fixtures with T8s, T5s, CFL and LEDs, using occupancy sensors to control lighting and HVAC operation throughout the school and high efficiency classroom air filters. Despite the growth of the facility from 42,409 sq. ft. to 73,591 sq. ft., total GHG emissions have been reduced from 467.6 to 418.4 MTCO_{2e}. The buildings energy usage is continuously monitored and results along with suggestions for improvements are issued on a regular basis. So far consumption has been reduced by 2.6% per s/f while carbon emissions have been reduced by 15% s/f.

Element 1B: Water quality, efficiency, and conservation

8. Which of the following practices contribute to the protection and conservation of the school domestic (drinking) water? (Check all that apply)

- We are served by a community/city/county owned water provider that is required to report annually on the quality of our water.
- Our school has its own well and we do water sampling in accordance with our local and state health authorities.
- Our building maintenance department cleans all water taps and drinking fountains on a regular basis to prevent bacterial contamination.
- We have a water reduction plan in place that includes:
 - low-flow water fixtures
 - native drought-tolerant plants
 - minimal or no landscape irrigation
- Our school water use is tracked and benchmarked using EPA ENERGY STAR Portfolio Manager or an equivalent program.
- [in the near future] We use only non-potable water (such as water collected from a rain barrel or rain cistern) for irrigation.
- Our school has a greenhouse gas emission reduction plan in place that targets water use. We measure our annual progress against our reduction goal.



9. Use the list above as a guide to describe how your school implemented and is maintaining your water conservation program including your baseline, your goal, and your reduction rate to date. Explain how you will continue to reduce water use to meet your goal. Include who in the school participates in the water conservation program. Describe the work done to protect water taps and drinking fountains from bacterial contamination. (Maximum 250 words)

As outlined in Element 1A, Linden Hill Elementary School is currently involved in an ESCO project that not only focuses on reducing the consumption of electricity and natural gas but also water. As part of the scope of the project water saving measures throughout the district is projected to reduce consumption by 10,000,000 gallons per year. At Linden Hill such measures included the replacement of toilets with low flow ones, water restrictors on faucets and spray nozzles. As with the other energy sources water consumption is monitored on a monthly basis. Additionally, the Garden Club has obtained rain collection barrels that will be installed for use this spring and moving forward, in order to water the gardens with collected rain water.

Element 1C: Waste Management and Product Procurement

10. Which of the following programs has the school initiated and maintained to reduce solid waste, eliminate hazardous waste, and procure environmentally preferable products? (Check all that apply)

Our school has initiated and maintained a solid waste management plan that includes waste reduction practices, collection of recyclable and compostable materials, elimination of hazardous waste, and preferred-purchasing requirements.

Our recycling program collects every material that is collected in our city/county.

Our school composts organic materials on site.

Our school only purchases office/classroom paper that is 50% or more post-consumer material.

Our school only purchases office/classroom paper made of fibers from forests certified as responsibly managed in accordance with Forest Stewardship Council, Sustainable Forestry Initiative, or a comparable certification standard. (All copy paper)

Our school purchases office/classroom paper that is totally chlorine-free (TCF) or processed chlorine free (PCF).

All new furniture purchases are certified by the Business and Institutional Furniture Manufacturers Association or a comparable standard.

Hazardous and dangerous products at our school have been reduced or eliminated.

Hazardous, dangerous, and universal wastes at our school are handled and disposed of in accordance with federal and state regulations.

Our school has a greenhouse gas emission reduction plan in place that targets solid waste reduction and recycling. We measure our annual progress against our reduction goal.



11. Use the list above as a guide to describe your solid waste management plan, including goals, materials you collect to be recycled or composted, your current recycling rate, and how you calculated the recycling rate. Include who participates in the waste management program, any student learning objectives, and the educational and environmental benefits to date. Provide an overview of your environmentally preferred purchasing. (Maximum 250 words)

Red Clay Consolidated School District uses a single stream waste recycling program at all schools. In addition they have been involved in an off-site organic composting program whereby cafeteria waste was collected daily by a vendor. Unfortunately the vendor had some problems with the regulatory agencies and has ceased operations. The district is currently looking at a program called Paper Retriever to handle waste paper and cardboard. In lieu of this district- sponsored composting program, the Linden Hill Garden Club has initiated a limited-scope composting program in third grade lunches. Fresh fruit and vegetable scraps are collected from the cafeteria and utilized in an on-site composting project that provides compost for use in the raised bed gardens. As the program develops, additional grade levels will be added. As far as procurement, as a state agency, Red Clay operates under Title 29. However, various state regulations regarding the purchase and use of VOC's, mandated purchase of Energy Star labeled products, have improved the overall procurement process.

Element 1D: Alternative transportation

12. Our school provides the following alternative transportation options to driving in single occupancy vehicles to and from school. (Check all that apply)

- Our school participates in a "Safe Routes to School" or similar program.
- Our school has designated carpool parking stalls.
- Our school offers yellow school bus service.
- Our school is served by city/Metro public transportation service.
- Our school has a well-publicized no idling policy that applies to school buses.
- Our school has a vehicle loading/unloading area(s) at least 25 feet from building air intakes, doors, and windows.
- Our school has a greenhouse gas emission reduction plan in place that targets transportation. We measure our annual progress against our reduction goal.

13. Use the list above as a guide to describe alternative transportation options to driving in a single occupancy vehicle to and from school. Included how the alternatives are promoted, any data you have about participation in school bus service, public transportation, carpools, ride-sharing, and commuting to school by walking or biking. (Maximum 250 words)

The Principal is considering implementation of a Safe Routes to School Program for 2015. In regular school-to-home communications, use of school buses is encouraged. School buses are not permitted to idle on school grounds. Since a significant portion of our students are choice students who are not bus eligible, our car line is significant; within the car line, carpooling is encouraged and idling in car line is discouraged.



Pillar 2: Improve the health and wellness of students and staff

Pillar 2 includes two main elements and is **30%** of your score.

Element 2A: An integrated school environmental health program

14. Which of the following programs or practices does your school implement to ensure the environmental health of the school community? (Check all that apply)

- Our school implements an up-to-date Integrated Pest Management program.
- Our school implements an up-to-date Indoor Air Quality Management Plan modeled after the EPA's Indoor Air Quality (IAQ) Tools for Schools or other national recognized model.
- Our school has identified and properly removed sources of elemental mercury and prohibits its purchase and use in the school.
- Our school does not have any wood playground equipment or other structures that contain chromate copper arsenate or we have identified these structures and have taken steps to reduce exposure.
- Our school has a comprehensive green cleaning program.
- Our school has tested all frequently occupied rooms at or below ground level for radon gas and has fixed and retested all rooms with levels that tested at or above 4 pCi/L or our school was built with radon resistant construction features and tested to confirm levels below 4 pCi/L.
- Our school has an Asthma Management Program consistent with the National Asthma Education and Prevention Program.
- Our school has a chemical management program in place, with elements of purchasing, inventory, storage, training, spills, and hazards communication.

15. Use the list above as a guide to describe how your school implements and measures the success of your integrated environmental health programs and practices to ensure the health and safety of the school community. Include information on how your school addresses exposure to health hazards including radon, chromate copper arsenate, carbon monoxide, chemicals, asthma triggers, and mold. (Maximum 250 words)

Our school adequately addresses exposure to health hazards including radon, chromate copper arsenate, chemicals, asthma triggers and mold with the assistance of Batta. They test the building and develop an AHERA report every six months. Our school has a contract with Bug-Rite that utilizes safe pest management practices to control pests. We utilize the MSDS program and train staff regularly on procedures to handle purchasing, inventory, storage, spills and communications regarding hazardous chemicals and materials. All mercury and mercury compounds were removed in 2005. Our playground does not contain any wooden playground equipment that contains chromate copper arsenate. All playground equipment is up to date metal equipment that is maintained for safety on a regular basis. We currently use a comprehensive green cleaning program for maintaining building cleanliness.



2B. High standards of nutrition, fitness, and quality outdoor time for both students and staff

16. Which of the following programs or practices does your school implement to promote nutrition, physical activity, and overall school community health? (Check all that apply).

- Our school participates in the “Coordinated School Health” program (www.cdc.gov/HealthyYouth/cshp/).
- Our school participates in the USDA's Healthier School Challenge.
- Our school participates in a Farm to School or comparable program to use local, fresh food in our cafeteria.
- Our school has a food garden either on-site or in close proximity to our building, which is utilized by the cafeteria or by teachers.
- Over the past year, our students spent an average of at least 120 minutes per week (for middle and high schools) or 90 minutes per week (for elementary schools) in school supervised physical education.
- At least 50% of our students' annual physical education and physical activity (including recess) takes place outdoors.
- At least 50% of our students have participated in the EPA's Sunwise or equivalent program (to protect students from skin cancer).
- Our school integrates health measures into student assessments.

17. Use the list above as a guide to describe how your school implements high standards of nutrition, fitness, and quality outdoor time for both students and staff. (Maximum 250 words)

Linden Hill implements high standards of nutrition, fitness, and quality outdoor time for both staff and students. Every year our school nurse organizes an exercise program which offers rewards to participating staff members based on the amount of exercise they receive each week. Our students have options each day of fresh fruits and vegetables for lunch. In the fall and the spring, staff members organize and facilitate a Girls on the Run group that culminates with a 5K race. In gym class, all students take part in the FitnessGram fitness test. They are assessed at the beginning of the year on height/weight; as well as strength and flexibility using push-ups, curl ups, sit-and-reach and trunk lift. They are assessed again at the end of the year. This information is shared with students to show the importance of strong, healthy bodies. In the classrooms as well as in physical education classes, students are exposed to instruction regarding the body systems as well as healthy eating, sun health, and dental health. Students participate in a minimum of 30 minutes per day of outside play. They have a variety of climbing equipment and balls to organize football, soccer or kickball games. As a result, Linden Hill students and staff have a strong sense of healthy bodies.

Pillar 3: Provide effective environmental and sustainability which incorporates STEM, civic skills, and green career pathways

Pillar 3 includes three main elements and is **35%** of your overall score.

Element 3A: Interdisciplinary learning about the key relationships between dynamic environmental, energy, and human systems



18. Describe how your school integrates and assesses/measures students’ environmental or sustainability literacy at each grade level including curriculum, courses, outdoor learning, and assessments. (Maximum 250 words)

To explain our school curriculum defining relationships between dynamic environmental, energy, and human systems, we have divided our explanation into the following sections: school-wide; grade-wide; related arts, and club level activities.

School-wide: Monthly, we introduce a school-wide theme for the month. We integrate our school character-development trait program with our green initiative program. Our green team develops a theme and then distributes the lesson electronically. The character trait and green lessons are loosely connected. Teachers discuss how the character traits can be applied in real-life situations and decisions, including but not limited to sustainable and green choices. The following character traits and green lessons have been aligned:

Character Trait	Green Lesson
Empathy	How to pack a green lunch
Trustworthy	Single-stream recycling
Self-confidence	Sustainability life-style choices
Responsibility	Green holiday alternatives
Respect	Packaging Awareness
Cooperation	Cafeteria and home composting
Compassion	Bicycle safety
Integrity	Screen-free summer activities

Each of the Green Lessons is developed collaboratively by the Green Team and distributed to all teachers for use on Pride Day (the first Friday of each month). As a school, we emphasize pride in ourselves, our school, and our world. Green Lessons emphasize application of a character trait in practical, earth-friendly ways. They are multimedia lessons, including power point presentations, smart board lessons, videos, and hands-on activities such as sorting waste and identifying recyclables.

Grade-wide: Environmental and sustainability topics are integrated within the classroom through the Delaware State Science curriculum for grades K–5. Approximately 25% of the Delaware curriculum emphasizes natural organisms, natural systems and human impact within those systems.

Assessments: The summative assessments for the Delaware recommended curriculum are provided by the state. Each teacher administers these assessments as well periodic formative assessments.

Related arts, and club lessons and activities include:

1. Compost readiness – Third Grade
2. Garden Club – Third through Fifth Grade



3. Recycling Programming unit – Computer Class – Fourth and Fifth Grade
4. Recycling Art Project – Kindergarten through Fifth Grade
5. Library Book Exchange -- Kindergarten through Fifth Grade

19. Describe professional development opportunities available to your teachers in environmental and sustainability concepts and the number and percentage of teachers who participated in these opportunities during the past 12 months. (Maximum 250 words)

We divided the professional development opportunities into school-wide and individual learning experiences.

School-wide:

We have provided our teachers with training prior to each “Green Lesson.” We trained the teaching staff during our staff meetings. As noted in section 18, we craft each green lesson to encourage positive character and environmental values. These lessons take a variety of modalities including videos, music, writing, and presentations. All teachers (100%) participated in the training for the “Green Lessons.”

Our school also participated in the “Take 10!” physical activity program. This program asks teachers to engage students in at least 10 minutes of physical activity daily. Teachers who participated in this program received training materials for the program. Approximately 90% percent of the staff participated in this activity.

Individual learning experiences:

Approximately 20% of the staff has participated in professional development programs focusing on environmental and sustainability curriculum. These teachers incorporate a green and sustainable focus into their lesson planning across subject areas. Additionally, many of them belong to the Green Team, which plans and distributes monthly Green Lessons for use on Pride Day. Our second grade team trained in the new science curriculum focusing on bridges. One of our fourth grade teachers took the NASA NICE summer program focusing on climate change according to new NextGen Science Standards. Our computer teacher participated in a computer science program looking at the computer science principles regarding global impact. One of the topics in the computer science program examines the environmental impact of cloud computing (including but not limited to improved communication about green initiatives, reduced use of paper products, and growing accessibility of shared information). Lastly, one of our third grade teachers traveled to Harvard to learn about the future of education. Some of the major topics of the Harvard program examine global leadership, stewardship, and responsibility.

Element 3B: Use of the environment and sustainability to develop STEM content knowledge and thinking skills to prepare graduates for the 21st century technology-driven economy

20. Describe how environmental and sustainability education at your school supports teaching science and engineering practices (e.g., asking questions, developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, constructing explanations, and engaging in argument from evidence) and



supports robust general science education that includes a deep understanding of life, physical, and earth sciences. (Maximum 250 words)

Linden Hill cross-cuts environmental education and sustainability education seamlessly through homeroom lessons, related arts classes, and hands-on class and club activities. STEM experiences focusing on environmental and sustainability topics are integrated on all grade levels within the classroom with and through extra-curricular clubs.

The Delaware State Science curriculum integrates environmental principles in its Kindergarten through 5th grade curriculum. Approximately 25% of the Delaware curriculum emphasizes natural organisms, natural systems and human impact within those systems.

Kindergarten students observe and describe the properties of trees and leaves in the school yard. They compare similarities and differences of the trees and leaves observed on a mini field trip. Students observe the trees throughout the school year to track the changes that come with the different seasons. They compare leaves to geometric shapes. After acquiring vocabulary associated with properties of trees and leaves, they use drawings, words, and oral language to describe observations.

First and second grades students study insects; this heightens student awareness of diversity of animal forms. During each investigation an insect is introduced and students make observations of behaviors and structures, discuss findings, and ask questions. Students observe the life cycles of insects and compare the stages of metamorphosis exhibited by each species. Students have terrariums with live insects and their food at each table in the classrooms.

Third grade science units focus on the human body, with a heavy emphasis on healthy choices and how they impact our well-being long-term. In combination with these science standards, third grade has pioneered a composting program at their lunch time that reduces waste and provides the garden club with fertile soil.

Fourth and fifth graders learn how all animals depend on plants and create food chains of many organisms. Students identify how an animal's behavior is related to the environment including the number of organisms present, the availability of food and resources. Students explore and discuss the various ways humans depend upon the natural and constructed environment. They investigate how humans change the environment that can be beneficial or a detriment to us and other organisms.

Our multi-aged "Roots and Shoots" Club along with, teachers, administrators, parents and community groups are planning a woodland trail on the school property and will identify trees and plants along the trail and create guide for classrooms. (Jane Goodall's youth- led community action and learning program)

Members of any of the multi-aged perpetual garden clubs observe first-hand arthropods and invertebrates as they prepare the soil and compost. They sketch the animals in their garden journals and or photograph them. They research the animals to find out if the species will be a help or hindrance to the garden plants. They discuss and collaborate on a course of action if the species is determined to be bad for the plants. (The members of this club change 3 to 4 times each year to allow more students to participate.)



These science topics are supported by the librarian and the technology teacher by helping students research and write about topics that support classroom study. The librarian uses electronic books, books collections, and tablets to explore the topics. She also created a bird feeder area outside library.

Students participating in an “Eco-School” project are researching and collaborating on how to make the birding area a wildlife habitat. Some ideas they are considering are using rain barrels to add a sustainable, environmentally friendly water source; planting native plants that will attract birds, butterflies, and other animals; and they types of bird seed and feed that will attract different species of birds in the mid-Atlantic region. They plan to offer nesting materials and are looking at plans to build bird houses. They will record animals they see now and collect the data and make plans based on these observations over time.

Our related arts programs (Music, art, physical education, Spanish experience, technology, and library and media sciences) regularly build learning experience within the discipline through the an environmental and sustainability lens.

The art teacher has the students research birds, sketch and paint them, and finally they make clay birds. She is also is a champion of using recycled or repurposed materials to teach art standards and math standards, such as symmetry, perimeter, area, design and construction.

The Technology teacher supports classroom teachers’ curriculum utilizing research and coding. Students in 4th and 5th grade are working on a long-term ecology project using MIT SCRATCH. The topic for the project is recycling and sustainability because of our finite resources. More information about the instructional technology projects and a website used by students and staff can be found at www.tunaruna.com This site is created and maintained by the technology teacher.

Our gym teacher supports the 5th grade study of the human body by having students hold heart rate monitors. They measure the resting heart rate and the active heart rate. Students collect the data, and graph it. Students compare the mean, median and mode of the measurements.

The Recycling Club recycles paper, plastic, glass, batteries, ink, and old cell phones. This year, classroom teachers pick one recycler as a classroom job which allows k-5 students to participate in recycling. Our Recycling Squad has been a part of our school for the past seven years. Before the transition to classroom-based management of recycling, a squad of 60 student volunteers monitored classroom and school recycling on a daily basis.

Students have so many opportunities to participate in Environmental Education and Sustainability lessons through hands-on activities. Twenty-first Century Skills and STEM opportunities are available through classroom curriculum, specials, and clubs, and websites. Students are required to make predictions, collect data, research, collaborate, and communicate findings across the curriculum.



In the past 12 months, we have offered Odyssey of the Mind, Lego League, Science Club, Programming Club, and Recycling Club. While space limitations prohibit much detail, briefly: Odyssey of the Mind challenges students to carefully monitor their effective use of materials. Lego League stresses research, engineering, and science with each challenge. Our Science Club offered our students STEM experiences with an eye on Green principles.

21. Describe how your curriculum connects classroom content to career and college readiness, particularly post-secondary options that focus on environmental and sustainability field studies and/or careers. (Maximum 250 words)

Our STEM based curriculum (science, recycling club, technology, programming club, Pride Day Green Awareness lessons, and gardening club) connects to career and college readiness by teaching student's career and life skills in contextual settings.

- Students learn about recycling from an environmental standpoint, as well as a career pathway. When we taught how to recycle plastics, students watched a video which explained the process, as well as, introduced the type of work staff necessary to maintain a recycling plant. Some students went on a field experience there and to a landfill.
- Programmers in the technology teacher's extra-curricular club learned about the exciting field of computer programming, and how programming is becoming a necessary skill for many different fields in the work force.
- The Technology teacher led a school-wide coding event called an Hour of Code, where students watched an inspirational video of various people talking about their field of work, and how programming was a vital component to its success.
- Students learn about the various jobs associated with gardening, horticulture, botany, composting and recycling through the gardening club.
- Fourth grade students learned about climate change, and how they can effect positive changes in our environment through human adaptation and mitigation. They learned that many jobs in the future will be created to address both adaptation and mitigation, and how they could choose these career paths through continued studying of science concepts such as, geography, biology, engineering, technology.
- Odyssey of the Mind Curriculum is offered for students in grades K-5. Students brainstorm many answers. This method teaches independent critical thinking and problem solving skills that apply to many aspects of daily life. Coaches utilize the STEM curriculum for each problem whether it is a performance or a technical problem. The website at www.odysseyofthemind.com offers stem curriculum for all teachers created by NASA. For example during one lesson, "From a Distance", students research the Earth's changes create an informational exhibit based on their findings. NASA has long been a partner with OoTM and offers a lot of STEM-related discussion ideas for all classrooms at <http://earthobservatory.nasa.gov/odysseyofthemind/> this offers some real time discussions about the environment. Students learn about the careers and educational



requirements of working for NASA. Students are afforded opportunities to work with engineers, learn to use power tools, learn to sew, and learn to create moving set parts and design efficiently within a budget, with emphasis on using recycled items.

- Lego League researched and found solutions to survive weather catastrophes due to climate change. They created Lego displays, or created a Mind Storm program that had the task to find ways to survive floods, fire, mudslides, or hurricanes. Students learned about scientists and careers that study climate, greenhouse gases, forest management, and urbanization.

Our school looks for club opportunities where students have to brainstorm, engage in decision making, collaboration and consensus building that require real-life skills. In the past year approximately 350 students have had the opportunity to experience meaningful extra-curricular activities that offered students access to career information and higher education awareness.

Making students aware of careers and College ready is the goal of all teachers in our building and district. This is integrated in all subject areas as part of our mission.

Element 3C: Development of civic engagement knowledge and skills, and students' application of these to address sustainability and environmental issues in their community

22. Describe your students' civic and/or community engagement experiences integrating environmental and sustainability topics/concepts, field studies, community service, etc. Address if and how students conduct an age-appropriate community engagement projects around a self-selected environmental or sustainability topic at every grade level; and partnering with local academic, business, informal science institutions and/or other schools to help advance the school toward the 3 Pillars and/or assist the progress of (an) other school(s), particularly a school with lesser capacity in these areas) (Maximum 250 words)

Students of all ages have many opportunities and are encouraged to use the knowledge presented in lessons or researched to actively engage in civic-minded, environmentally sustainable projects. Students are also encouraged and celebrated for initiating innovative programs in our school. We want our students to recognize themselves as agents and actors of change. Below are examples of some of the programs we offer our students.

- **Researching and teaching others about organic composting in the cafeteria and home by creating posters and presenting lessons learned.** Students created an informative presentation and delivered it to each grade level during their lunch periods. Students then collected compostable materials to use for our vegetable garden compost. This presentation was created by fourth and fifth grade students and delivered to all grade levels.



- **Inviting families to recycle old phones and batteries at school using our eco-friendly companies rather than discarding them in the trash.** This program was a student's idea that has become a part of our school's recycling culture. Two years ago a student recognized that her household was not recycling batteries. She brought the idea to the school Recycling Squad (a student-run program) teacher coordinator and asked about adding batteries to the items that the school collects. The teacher gave the student permission and some guidance on how to create a successful program. The student collected shoeboxes for each classroom where the children could deposit their household batteries.
- **Researching, writing letters, and having discussions about school/district discontinuing use of Styrofoam lunch trays for greener recyclable biodegradable trays.** This is another student-initiated program that is currently developing and ongoing. During the 2013-2014 school-year, students recognized that the cafeteria replaced the recycled paper trays with Styrofoam trays. They began a campaign to bring back the paper trays. This effort has students talking to district administration, supply vendors, and waste management programs. Often, students have met with barriers but they are still battling to be environmentally friendly. The coordinating teacher has been awed by the children's dogged pursuit of their goal in the face of bureaucratic obstacles.
- **Participating in school and home tree seedling project along with teachers and administrators and the forestry department.** Individual teachers participate in Delaware's Arbor Day Poster Contest. Each participating student received a seedling. Linden Hill students have won this contest on two occasions.
- **Participation in a Tree Adoption Program.** Three years ago, the Linden Hill Recycling Squad used the Arbor Day Tree contest as a means to offer any Linden Hill student the chance to adopt a tree. Recycling squad members solicited their friends to enter the Arbor Day Poster contest. Meanwhile the Recycling Squad created a tree adoption form and a "New Tree Parent Care Guide". Students interested in adopting a tree had to complete a student-created adoption form. Upon receipt of their tree, the new tree parents received a student-created tree care manual. Linden Hill distributed 200 native Loblolly Pine trees.
- **Creating a wildlife habitat during the winter outside the library window.** Information gained can be applied at home and in the community.
- **Participate in garden club one of 3 seasons (fall, spring, and summer) to observe the process of see- to-food on the table while incorporating math, science, and reading and language arts at the same time.** Students are invited to participate in the Gardening Club. Students and teachers built our school garden and have raised numerous crops. At the end of each season, participating students celebrate the bounty of their garden with a family feast. Students learn and use water conservation techniques by using water barrels and mulch. They also learn how to raise an organic garden to avoid adding chemicals to



our school property. Collaboration for the school garden and other environmental projects include:

- The PTA and the School District helped with funding
- The school administrators, teachers, other school staff, including district maintenance
- Parents, students, extended families
- Girl Scout; High School Helpers; a Horticulture Student
Senior Girl Scout planned the raised garden beds, prepared and taught lessons and made a resource book. The Horticulture student taught students about planting flower beds and talked with students about contest and field experiences where she worked at Hagley Museum.