

NEF Grant Application

Check box for current grant application cycle:

- Fall
 Spring

Project Name: Seed to Harvest: Living Lab

Primary Contact: Krissy Fernandes (Ben-Hem PTO, Co-President)

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List of Team(s) and Teachers/Specialists participating.

Ben-Hem PTO Board (Krissy Fernandes, Tracey Gondelman, Chris Scully, Jen Little, Debbie Forte)

Seed to Harvest Committee/Board (including Krissy Fernandes, Mary Gavin, Rebecca Hall, Maureen McMahon, Kathleen Cappellano)

Ben Gatto, Vice Principal

Mary Gavin, ACCESS Teacher

Jessica Lichodolik, ACCESS Teacher

Carloline Kruszewska, Kindergarten Teacher

Julianne Simmons, First Grade Teacher

Cate O'Brien, Fourth Grade Teacher

(with feedback from teachers on 2013-2014 Seed to Harvest programs)

1) What school(s) benefit from this proposal?

(Check all that apply.)

- Natick Preschool
 Bennett-Hemenway Elementary
 Brown Elementary
 Johnson Elementary
 Lilja Elementary
 Memorial Elementary
 Kennedy Middle
 Wilson Middle
 Natick High
 Other:

2) What grade levels benefit from this proposed program?

(Check all that apply.)

- Preschool
- Kindergarten
- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Grade 5
- Grade 6
- Grade 7
- Grade 8
- Grade 9
- Grade 10
- Grade 11
- Grade 12
- After School Program
- Other:

3) Total Number of students to benefit: 600+ (based on current school enrollment)

4) Total amount of funds requested from NEF: \$4,000

5) Can you run this program on partial funds?

If you answer no, please skip down to question 6.

- Yes.
- No.

5a) If yes, what is that partial amount? \$2,500 - \$3,000

5b) If yes, explain how you would run this program on partial funds, and what benefit you would have if granted the full amount.

Based on the goals of the Living Lab, we are looking to expand on our existing Seed to Harvest program by extending the growing season and by providing a teachers with a dedicated space to conduct growing and nature experiments that tie into or expand upon the Core Curriculum. The number one priority for meeting this goal is to install a greenhouse space that can be used to start growing plants earlier in the season (so students can see the fruits of those plantings during the school year) and can used by teachers to do their experiments (classrooms do not have the window space needed to house plantings in the classroom and keep the moisture level where it needs to be). Bennett-Hemenway Elementary is lucky enough to have an unused courtyard space that the greenhouse can be contained in. This provides an ideal location for a contained outdoor classroom. In addition, the school already

owns 5 large picnic tables that can be relocated to this space for classroom seating. With the greenhouse, and the rain buckets to provide the needed water for the program, the classroom would be immediately valuable.

The additional funds requested would enhance the program by allowing us to add elevated garden beds that can be dedicated to a grade/class for experiments where more soil depth is needed (i.e. growing root vegetables or larger plants that need to establish deeper root systems). The elevated beds allow for planting activities to occur without students getting too dirty. It also provides better accessibility for students in wheelchairs or other disabilities. The funds would also allow for adding shelving to the greenhouse to allow for organization of plants by grade or program, and finish the greenhouse off with a flat paver floor. The paver floor would make the greenhouse space cleaner and easier for students with disabilities to access.

While full funding would allow us to fully implement the Living Lab program in the first year, the program can get started with just the greenhouse and rain barrels and then the rest can be added over time, as funds are available.

6) Are you seeking funds from sources other than NEF?

If you answer no, please skip down to question 7.

Yes.

No.

Other: We do not have an alternate source for funds at this time. Depending upon the outcome of the NEF grant, we may reach out to parents at our bi-annual fundraising auction or garden centers in our community to raise the funds and or materials needed to complete the program.

6b) If yes, name other sources, and amount you are requesting from them.

N/A

6c) If yes, explain how receiving or not receiving funds from other sources will affect this program's implementation.

N/A

6d) If yes, tell us the total amount of funding required from all sources (NEF plus other sources).

N/A

7) Date this proposal was submitted to the appropriate principal:

All grant proposals must be submitted to building principal.

September 17, 2014

8) Have you been awarded grant funds through NEF for any past projects?

If no, please skip down to the Project Description section.

- Yes
- No
- Other

8a) Have you submitted feedback to NEF for all of your past projects?

NEF requires you to submit feedback on projects funded by NEF within 6 months.

Whether or not you have submitted feedback on past projects will impact your consideration in this and future grant proposals. Please submit all feedback ASAP.

- Yes
- No
- Other: I was not the person who submitted the previous Seed to Harvest grant requests. I know that Maureen McMahon and Kathleen Cappellano (program founders) have provided feedback, however I don't have access to see what level of detail was provided. I have also provided updates at Natick Grows meetings (where members of NEF have been in attendance) and sent pictures and updates on our garden via email.

Project Description:

Please review the NEF Grant Proposal Evaluation Criteria (at bottom of application) for a detailed description of the criteria for selection to help you write your proposal.

I. Clearly state the project's goal, objectives, and what your are going to do (method):

The goal of the Living Lab is to continue upon the mission of the Seed to Harvest program by further integrating gardening and outdoor learning into the existing curriculum. There are countless ways that the garden can be used; the direct application of learning about living things and how plants grow, to facilitate discussions around nutrition and healthy eating, and to provide a relevant topic for other areas of learning such as reading and writing exercises.

The Seed to Harvest garden (located in the rear of the school) has provided an initial opportunity for teachers to incorporate the outdoors into their classroom learning. In the 2013-2014 school year, over 80% of classrooms were involved in at least one garden activity organized by the Seed to Harvest committee. These activities included planting seedlings in the classroom, reading about gardens, making craft projects to display in the garden, helping with garden maintenance, planting seedlings and mature plants, and harvesting fruits, vegetables, flowers and herbs.

Surveys were sent to teachers after each activity to gauge its success. Overall, the feedback was very positive. In addition to the surveys, we were able to observe the

success of the garden in the behavior of our students. Students were very excited about the garden and would run over after school to see if there were any fruits or vegetables ready to pick.

A few suggestions for improvement that came out of the surveys were:

- Provide opportunities for classes to be able to participate in the entire growth cycle from planting the seeds, preparing the soil, planting the seedlings, measuring the plants, maintaining the garden space, and harvesting the produce.
- Add more volunteers to manage students outside of the school during activities.
- Ability to use plants for experiments (i.e. plant carrots and pull them every 2 weeks to learn about how they grow) that tie into the grade-level lessons.

Aside from the need for more volunteers (an ever present challenge), the remaining suggestions highlighted the need for a Living Lab. The existing Seed to Harvest community garden provides the means to get students excited about gardening, connect them with their food source, and educate them about nutrition and healthy eating. In order for the space to do this, however, it is important that the plants in the garden grow to maturity. It is difficult to use this space as a lab for experiments because it would reduce the productivity of the garden. In addition, the garden is open to the community. As a result, it is difficult to ensure that experiments and lessons are not compromised.

The objective of the Living Lab would be to create a learning space that teachers could use to expand upon their existing classroom learning. Classroom space is limited and therefore precludes teachers from adding hands-on experiments that require space, sun, consistent moisture, etc. The greenhouse in the Living Lab would have the added benefit of allowing us to start growing seedlings earlier in the Spring which would allow more plants to mature from seed to harvest before the school year ended.

The Living Lab would be treated much like the Computer Lab. Teachers would have the ability to schedule time for their class to use the space. They would be responsible for developing the content of their programs so that it meets the needs for their class and reduces the need for parent volunteers. The Seed to Harvest Board and School Administration would assist in this process by providing resources and training with ideas on how to incorporate a Living Lab into the curriculum. The Ben-Hem PTO would also consider requests for funding to bring in traveling science education programs to support these efforts.

The implementation of the Living Lab consists of:

- Purchasing and assembling a greenhouse with staging shelves to hold seedlings and experiments. Addition of paver flooring can be added at any

- point to increase the cleanliness and accessibility of the greenhouse. (Funded by the NEF Grant)
- Purchasing and setting up rain barrels to provide the water needed to maintain the Living Lab and provide additional opportunities for learning. (Funded by the NEF Grant)
 - Purchasing and assembling elevated garden beds. This would include filling the beds with garden soil. (Funded by the NEF Grant)
 - Setting up the five (5) existing picnic tables in the Living Lab space. (No funding required)
 - Setting up a Living Lab scheduling process and training teachers on how to request time slots for their class. (No funding required)
 - Creating a Living Lab online resource library with links to existing lessons and activities that can be used by Teachers to enhance their curriculum. (No funding required)

II. Relate the project to the current curriculum and describe how this will enhance or enrich the students' learning experience.

Many resources are available that include lesson plans and activities for incorporating a Living Lab into the curriculum of grades Kindergarten through Fourth (and beyond). Below is a list of a handful of free online resources available to teachers:

- Our Growing Place (<http://www.ourgrowingplace.us>)
- National Agriculture in the Classroom (<http://www.agclassroom.org>)
- Life Lab (<http://www.lifelab.org>)
- The National Gardening Association (<http://www.kidsgardening.org>)

As part of the Living Lab program, we will create a website with links to these resources and more to assist teachers in building the garden into their curriculum. Based on conversations with several of the Bennett-Hemenway teachers, some of the initial ideas for how to use the Living Lab are:

- Creating a sensory garden to compliment a 5 senses unit.
- Activities to reinforce sequencing and following direction.
- Life cycle study.
- Simple science experiments such as "Does it need light? Water?"
- Build upon the existing first grade weather unit by using the rain barrels to study the effects of weather on plants, etc.
- Enhance the Grade Buddies program. For example, the kindergarten reads "The Lorax" by Dr. Seuss and then grows the "trufala" tree with their fourth grade buddies.
- Growing mother's day gifts.

In addition to the wonderful ideas submitted by our teachers, we found a great resource that maps lessons and activities to the Kindergarten through Grade 4 curriculum standards. (<http://www.lifelab.org/2013/12/content-standards>) The materials found here focus not only on Science standards, but also on Language Arts and Math standards.

For demonstration purposes, we looked at the Massachusetts Curriculum Frameworks for Science and Technology/Engineering. The framework focuses on using the principals of Inquiry, Experimentation, and Design in the Classroom. This aligns very well with the idea of the Living Lab. For example, to teach Inquiry skills in grades PreK–2, the framework calls for “scientific investigations that center on student questions, observations, and communication about what they observe. For example, students might plant a bean seed following simple directions written on a chart. Then they can write down what happens over time in their own words.”

III. Describe how you will assess the project’s success.

(NEF requires updates on the project within 6 months of implementation, and at the completion of the project.)

We will assess the Living Lab’s success in several ways. The first is to measure the usage of the Living Lab space. Since teachers will have to schedule time for their classroom to use the space, we will be able to easily quantify this metric. We do not expect that the Living Lab will be completely booked from the start, but we would like to see the number of hours scheduled to increase month-to-month over the 2015 growing season. We would also like to see participation from the majority of classrooms in the school. **(Metrics: Hours Scheduled, Percent of Classroom Participation)**

The second way that we will measure success is through teacher and administrator feedback. We have already established the process of surveying teachers through the existing Seed to Harvest program and will extend this to the Living Lab as well. The difference in the process is that with the Seed to Harvest community garden, we survey teachers after each activity or event that they participate in. In the Living Lab, teachers will be creating the content and schedule for their classrooms, so the surveys will have to be time-base rather than event-based. The feedback that we will be requesting is a satisfaction rating on several areas of the program including usability of the space, lesson planning resources provided, and ease of scheduling. To ensure that we have the needed data to update NEF on the project, we will initially send the survey to teachers every 3 months. **(Metrics: Satisfaction Ratings)**

We will also be asking for specific examples of the lessons and activities that they utilize the Living Lab for and suggestions for improvement. This information will be made available to all Bennett-Hemenway teachers and administrators so that ideas can be shared and we can move the program forward over time. **(Metrics: Use Cases and Suggestions for Improvement)**

IV. Itemize the proposed project's expenses and describe additional resources that might be required, if any.

The project expenses listed below are based on the lowest prices found online for each item. The actual items used may vary slightly as the models and pricing available at the time of purchase may change.

(\$ 117) 12 in. x 12 in. Pewter Concrete Step Stone - \$1.72/each
(\$ 189) 120 gal. Rain Barrel Set with Linking Kit and Diverter Kit
(\$ 200) Garden Soil
(\$ 570) Staging Table - \$95/each
(\$1,253) Coral Coast Wood Elevated Garden Bed - 70L x 24D x 29H in. Multicolor - D06-B - \$179/each
(\$2,299) Grandio Elite 8x12 Basic Greenhouse
(\$3,858) TOTAL EXPENSE

We are requesting a total of \$4,000 to allow for any tax or shipping expenses.

If there is anything else you would like to add to this grant proposal, but couldn't find an appropriate spot for it, please tell us below.

Note from submitter, Krissy Fernandes

I have had the honor of being able to run the Seed to Harvest community garden program over the 2014 growing season. We were fortunate enough that the founders, Maureen McMahon and Kathleen Cappellano, left us with an established garden with 10 raised beds and an irrigation system. This allowed us to focus last year on generating excitement around the garden and getting teachers and classrooms more involved. I was pleasantly surprised with how willing and eager everyone was to participate. As stated in the grant, we were able to involve over 80% of the Kindergarten through Fourth Grade classrooms in garden activities.

The involvement reached outside of the school day/year as well. We had families volunteer to maintain the garden on a weekly basis throughout the summer. Students eagerly met in the garden after school to harvest produce, see if anything new was growing, and even help out with weeding. Families met in the garden throughout the summer for special activities that allowed students to experience the garden in full bloom. Seed to Harvest really became a community-building program in addition to a teaching tool.

Over the past three years, the Seed to Harvest program has transitioned from a pilot program to a fully utilized part of the Bennett-Hemenway Elementary School. I am proud to have been part of this transition and am looking forward to expanding the program.

I am not alone, however. Last year, the Ben-Hem PTO officially took ownership of the Seed to Harvest garden. This means that there are funds allocated in the annual

PTO budget to pay for the annual garden expenses such as purchasing seeds, testing soil, and replacing damaged tools.

In conjunction with taking ownership of the program, the PTO has been working to establish a governing board that will ensure that the program is maintained from year to year. The board consists of Parent Representatives, a School Administration Representative, a Teacher Representative, and a PTO Board Representative. Over time, we would like to add a Community Representative and a Master Gardener as well. The management of the Living Lab would fall within the Seed to Harvest Board's purview.

One of the focuses of the Seed to Harvest Board, this year, has been defining the Living Lab program. We have been working with school administration, teachers, the Seed to Harvest founders and the Mass Horticultural Society to define requirements, research greenhouses, and look into how we could use the space. One of the drivers for moving the program forward was a newly formed partnership with Mass Horticultural Society's education development department. Mass Horticultural Society is looking to expand their educational offerings for local schools, specifically those with greenhouse spaces. We are hoping to pilot this program in one or more grades over the next 1-2 years and are in a position to have teachers provide feedback on what content would be most beneficial to augment their existing curriculum.

In addition to being able to take advantage of the program being developed by the Massachusetts Horticultural Society, having a greenhouse at Ben-Hem adds other opportunities for our school and community. We can use the greenhouse to house a worm farm. We can grow plants for fundraisers. Parents and/or educators can use the space for after education school programs. The possibilities are endless.

Included in the document submission of this grant, we have included:

- [LivingLab.png] - a diagram of the courtyard space that we intend to use for the Living Lab with the greenhouse, rain barrels, five picnic benches and seven elevated garden beds. This diagram is to scale.
- [Principal Letter.jpg] - a scanned copy of the letter of support provided by the Bennett-Hemenway Principal, Mr. Ian Kelly, and Vice Principal, Mr. Ben Gatto.
- [Living Lab_Elevated Garden Bed.pdf, Living Lab_Grandio Greenhouses.pdf, Living Lab_Grandio Greenhouse Accessories.pdf, Living Lab_Paver.pdf, Living Lab_Rain Barrell.pdf] - information on the items that we would like to purchase (with descriptions and prices)
- [Living Lab_Greenhouse Reviews.pdf, Living Lab_Grandio Ascent Greenhouse Reviews - Rankings, Ratings, and Reviews of Greenhouses.pdf] - reviews of the Grandio Elite greenhouse

- [Living Lab_Choosing a Material to Frame Your Greenhouse.pdf] - a comparison of the different greenhouse frame materials (we have chosen an aluminum frame greenhouse with 10mm polycarbonate panels and sliding doors for durability and cost)
- [CommonCoreConnections.pdf, K-8-NGSS_In_the_Garden.pdf] - “Common Core Connections” and “K-8 Next Generation Science Standards in the Garden” documents from LifeLab.org
- [MAHort_grade outlines.pdf] - a rough draft of the Massachusetts Horticultural Society’s education program

Thank you for your consideration of our Seed to Harvest Living Lab grant proposal.