

RREV's Innovative Pilot Template

As part of the **Innovative Mindset and Pilot Development** courses being offered through several of Maine's institutions of higher education, the RREV project uses a consistent template for the creation of all future pilots. Because every pilot created and tested with RREV funds WILL BE published in EnGiNE, we want all of Maine's educators to have the assurance of consistency.

This template provides an outline of the components required of an Innovative Pilot. The information in this template will serve as the basis for requests for school/district level project funding.

Section 1: Define the Need

A. Describe your innovation.

Consider what evidence supports the need for an innovation, and the evidence that suggests your innovation will improve the current situation.

As we enter the 2022/2023 school year, the Maine Academy of Natural Sciences is looking to build on the successes that we've had with student engagement in outdoor learning by building a Maker Space Barn and hiring an Agricultural Assistant. As a school, student engagement in daily academic courses has been a major challenge, but this year our work to cement project-based learning as the core of our academic program has helped significantly. Through our innovation, we hope to make hands-on, outdoor learning and natural science innovation a focal point for regular classroom instruction every day and to use the Maker Space Barn to offer a Blacksmithing and Metalworking course on campus for students.

Since the founding of our school in 2012, MeANS has partnered with a local blacksmith, Dick Tessier, to provide students with hands-on, experiential opportunities to further their career pursuits in the realm of metal fabrication and smithing. Over the past ten years, around 45 students have been given an opportunity to learn the art of smithing - around 9% of our population - and all these students experienced a sense of success when given the opportunity to connect what they learned in the classroom to other vocational pursuits.

This fall, the local blacksmith, Dick Tessier, we worked with was diagnosed with bone cancer. In its early stage, he met with us to discuss starting an onsite blacksmith shop on our campus and mentored one of our science teachers, Jeff Chase with the hopes of preserving his legacy at MeANS. Sadly, five months into the school year Dick Tessier passed away, leaving behind \$500 to our school to help initiate the development of a program on campus and [This Letter](#) to The American Blacksmithing Association and New England Blacksmithing, asking that they assist us as well.

When word of his passing was learned, an alumni of our school, who graduated from Richard's blacksmithing program in 2015, volunteered his time to ensure that students in the program would be able to complete the blacksmithing training prior to graduation. He also donated \$500 to help MeANS create a blacksmithing program on our campus. Hannes is a master blacksmith today, and he contributes this to the opportunity MeANS provided him while in school.

Richard will be missed. We would love to continue the blacksmithing opportunity to more students in the future. Though 45 students were able to attend this great learning experience, the waiting list far exceeded this number, as we've learned that 75% of our current students would be interested in learning about blacksmithing and metalworking in the coming year.

Turning students away was a great challenge for us as we know the personal and academic growth that occurred in our blacksmithing participants; with limited space, it was necessary. Now with Dick and his shop no longer a resource we can utilize, it's important for us to build upon our successes and create our own program on campus. In honor of his legacy, we are hoping to dedicate a wing of the Maker Space Barn to provide students with the opportunity to learn the art of blacksmithing on campus, as well as the chance to pursue other vocational passions, in the projects that they take on in their academic classes.

With this innovation, the primary need that we are hoping to address is student engagement in their daily academic classes. In our recent campus-wide Panorama survey, 26% of surveyed students responded positively to school engagement and only 22% of students said they were excited about going to their classes. On our campus, we have access to a one-acre farm, a Maple Sugaring shack, an apiary, and two greenhouses, yet very few of our teachers are able to utilize these resources in their daily classroom instruction and have seen these resources as optional or an elective opportunity. In a recent student survey, 64% of students said that outdoor spaces and resources were "sometimes" to "rarely used" in their daily classes, but 73% wanted to use these spaces and resources "everyday" or "every other day." We believe the Maker Space Barn will help to meet the needs that our students express.

One of the primary concerns that has been raised by teachers this year is the difficulty of connecting their classroom content to outdoor learning, and we hope to address this by hiring an Agricultural Assistant who would be responsible for supporting teachers in developing natural science projects and in using our one-acre farm, apiary, and our greenhouses. In a recent faculty survey, 88% of teachers agreed that they would benefit from the support of an Agricultural Assistant in planning and implementing outdoor learning. Already this year, we have made some strides to push classroom instruction outdoors with field trips and place-based learning opportunities. However, hiring someone whose sole focus is to connect classroom content and academic standards to outdoor education will go a long way towards engaging our students and supporting our teachers in the process.

Through the creation of the Maker Space Barn and the hiring of an Agricultural Assistant, we strive to provide the opportunities and resources to support teachers facilitating project-based, outdoor experiences in the natural sciences in their daily instruction while also continuing the legacy of blacksmithing and metalworking at MeANS. Whether this be learning the art of milling paper, creating tools for a physics experiment, or cleaning produce for a farm-to-table unit, our curricular goals for the coming year are to engage every one of our students in meaningful learning experiences that connect classroom instruction to our outdoor resources that we have on campus.

B. Identify which students would be impacted, targeted, or supported by the innovation.

Review the evidence – quantitative and qualitative data and research – that indicates this group of students is considered the most vulnerable and would benefit from the described innovation.

Data you can use to inform your innovation, rationale, and targeted student population include the performance of various groups of students (e.g., students in rural locales, students from low socio-economic conditions, students with disabilities, students who are EIs, students at risk for dropping out, student who are homeless) with regard to academic achievement, graduation rates, social emotional and mental wellness, economic data, and/or workforce participation.

In 2012, Maine Academy of Natural Sciences was founded on the principle of meeting the needs of students who have struggled to engage academically. While our school has evolved significantly over the past ten years - placing a heavy emphasis on outdoor, experiential, and project-based learning, and helping all of our students connect their academic experience to career pursuits - our goal of reinvigorating academic opportunities for students who have felt left out of academia remains.

As a Title 1 school in a rural location, we serve 167 students with a diverse array of academic needs and career aspirations. Over 48% of our students receive free or reduced lunch and 40% have either an IEP or a 504. What we have learned through the scope of our academic program is that active engagement in the outdoors and learning by creating and doing, benefits all of our students and helps many of them connect academic content to their daily lives.

Through the space and resources afforded us by the Maker Space Barn and the Agricultural Assistant role, our school will be able to provide all of our students with two classroom spaces designated for outdoor learning as well as the curricular resources and supports to connect student passions and interests to their daily classes. Academic engagement for students has been particularly low for students over the past few years during the depths of the pandemic, but what we have learned as a school is that our students crave more opportunities to experiment, to work with their hands, and to see the work they do in classes connect to real world products, needs, and the natural world.

As a rural school, being able to run a blacksmithing program on campus and connect student learning about the natural sciences to our outdoor resources will increase the engagement of our students in their learning, connect these students to vocational opportunities for work, and ultimately allow them to apply their agricultural skills and academic knowledge to meet the needs of their families and of our local community.

Section 2: Describe the Innovation

A. Describe the goals of your innovation.

Consider how your innovation will meet the needs of the identified target student population(s) and how you plan to achieve your goals. Additionally, consider any changes in policy, practice or structures you expect as a result of the innovation.

The primary goal we have with our innovation is to connect the natural resources that we have on campus (a one-acre farm, two greenhouses, an apiary, and a maple sugaring shack) to daily classroom instruction in order to increase student engagement and ownership of their learning experience. However, an equally important goal for us as a school is to create a lasting Blacksmithing program on campus that reaches more students more often and provides them with opportunities for vocational careers, certifications, and practical skills.

Already, this year, we have been hard at work reworking and organizing the curricula that we use in daily instruction to focus on student projects with tangible products and learning outcomes that push students outdoors to experiment, learn by doing, and share their projects with our community. As a school we have begun having project showcases and celebrations of learning where students can exhibit the natural science projects that they've taken on in class, and we hope to be able to utilize our outdoor resources and spaces to assist with the creation of these projects.

Through the Maker Space Barn and the support of the Agricultural Assistant, we will focus on supporting the needs of our students who see it as a priority to be outside daily or every other day by connecting units and investigations in their core classes to the products and projects that they produce. Already we have begun to plan out a harvest and farm-to-table unit for our Agriculture classes that will give students course credit and push our sciences classes out into the greenhouses and our one-acre farm. However, to further these efforts, we will stipend funds for each core content teacher to use for outdoor instructional materials and project resources in collaboration with the Agricultural Assistant.

Lastly, we hope to be able to offer year-round electives on campus for students who are passionate about agriculture, nutrition, forestry, and vocational pursuits, in order to meet their graduation requirements and to have some voice in how they do so.

B. Describe activities included in your plan for each stage – preparation (P) or implementation (I) – of your innovation.

- **Preparation** includes building stakeholder awareness, establishing routines and processes, and coordination of logistics.
- **Implementation** includes planned implementation activities, as well as professional development for the educators participating in the innovation.

	Activity	Purpose	Stage (P or I)	Date of Completion	Person Responsible
1.	Approved by Board & GWH (on property)	Outreach to community partners and stakeholders	P	December, 2021 (complete)	Matt Newberg
2.	Blueprint of Barn	Consult on Construction	P	December, 2021 (complete)	Matt Newberg
3.	Estimate for Barn	Quote for the price of materials and construction	P	January, 2022 (complete)	Matt Newberg
4.	Panorama Engagement Survey	Campus wide survey for students and families	P	June, 2022 (complete)	Matt Newberg
4.	Scope & Sequences for the 2022/2023 School Year	Development of Natural Science, Project-Based Curricula	P	July 13th (complete)	Evan Coleman
5.	Student Outdoor Education Survey	Feedback on need for outdoor experiences	P	July 18th	Evan Coleman
6.	Faculty Outdoor Resource Survey	Feedback from teachers on their needs for support	P	July 25th	Evan Coleman
7.	Agriculture Assistant	Stipend for point person on projects & intensives	P	August 31st	Head of School & Jeff Chase
8.	Blacksmithing Curriculum	Review Curriculum with students and gather input	I	September 6th	Jeff Chase
9.	In Service P.D.	Faculty Training on new space & classroom projects	I	December 12th	Ag Assistant & Jeff Chase
10.	Blacksmithing Course offered (March, 2023)	Rollout of new course for students on campus	I	March 14th	Jeff Chase

Section 3: Define Innovation Outcomes & Measure to Assess Outcomes

- A. Identify the outcomes (*i.e., student outcomes, changes in instructional practices, changes in student practice*) that you expect to see as a result of your innovation.

Consider both short-term and long-term outcomes, at different points in the time (e.g., at 6 months, 12 months, 2 years and 3+ years).

While we see the multi-purpose barn as a space that we will continue to expand upon with electives, classes, internships, and projects, our immediate hope is to create more cohesion between outdoor learning, classroom instruction, and project-based learning for students. More specifically, a few of the outcomes we hope to achieve are:

1. Hire an Agriculture Assistant to serve as a point person for our greenhouses, one-acre farm, and to help facilitate hands-on learning opportunities outdoors for students by supporting teachers **(3 Months)**
2. Construct a Maker Space Barn to be used by classes, intensive groups, and students with an emphasis on Blacksmithing, Vocational Pursuits, and regular outdoor instruction for ELA, Social Studies, Math, and Science **(6 Months)**
3. Increase course offering for Blacksmithing from 5 (each year since 2012) to 10 students for the coming year Our hope is to increase this offering to 10 in its first year and incrementally increase our offerings as the program grows. **(6 months - 12 months)**
4. The development of a robust blacksmithing program on campus where students can learn the trade, have opportunities to take blacksmithing for academic credit, and showcase the tools and works they create **(12 months)**
5. Create a collection of elective offerings including forestry, cooking, wood shop, and blacksmithing for the end of the school day to expose students to extracurricular pursuits and to help them earn credit in Health, PE, Art, and Career Development **(12 months)**
6. Cement units of study for all core content teachers that utilize our outdoor resources and spaces daily or every other day to increase student engagement and hands on learning. **(12 months)**
7. Increased collaborative efforts by teachers to connect the learning that students take on in class to the multi-purpose barn and to their engagement with the outdoors in project-based learning. **(1-2 years)**
8. Increased interest from students in outdoor, project-based learning during their core content classes, electives, and in individual projects **(1-2 years)**

B. Describe your plan for collecting and reviewing data to assess your innovation outcomes.

Potential data to collect includes qualitative and quantitative data (e.g., surveys, interviews, focus groups, observations, exit tickets, and on-demand assessment(s) that can be considered.

	Data Type	Baseline (B) Interim (I) Summative (S)	Frequency of Data Collection	Person(s) Responsible for Collection and Data Quality
1.	End of Internship Survey for Blacksmithing	Baseline	2x	Jeff Chase
2.	Student Interest Survey on Blacksmithing Elective	Baseline	1x	Jeff Chase
3.	9th Grade Student Survey on needs for produce, entrepreneurship & sales	Baseline	1x	Evan Coleman
4.	Focus Group session with kitchen staff on needs and quantities for Cafeteria	Baseline	1x	Jeff Chase
5.	Interviews & Observations of students Completing Blacksmithing Elective	Interim	Semesterly	Jeff Chase
6.	Ag Assistant log of collaboration with faculty and classes	Interim	Quarterly	Evan Coleman
7.	How many students completed a Blacksmithing unit (Q3 & Q4)	Summative (quantitative)	Semesterly	Jeff Chase
8.	Focus Group with students on engagement with outdoor learning	Summative (qualitative)	Semesterly	Evan Coleman
9.	Observation & Survey for Teachers on use of Barn & Resources for Classes	Summative (Intensive Groups)	Semesterly	Evan Coleman

C. Describe how you will **scale and sustain** your innovation, including necessary policy changes, changes in mindsets, capacity-building activities, and **long-term financial sustainability**.

Consider the systems changes that this innovation will require and promote.

Our project based, hands on curriculum is well established and a rich part of our school culture currently. The addition of a dedicated blacksmith shop and outdoor food prep and project wing will help us further enhance and expand this curriculum and increase student engagement based on the feedback that we have received from teachers and students alike.

The Maker Space Barn is intentionally designed to support expansion in the future. The initial phase of construction has two wings, one for blacksmithing and the other for food prep and outdoor learning. The architectural plans provide areas to expand two more wings, and our plan is to use one wing to support our forestry curriculum and one to enhance our nutrition and cooking curricula for student-produced projects and small business financial education.

Since this infrastructure enhancement adds to our established culture and curriculum, it will likely not require much of a change in mindset on the part of our teaching faculty or students. However, one thing we do want to push for is that outdoor education becomes a part of every classroom in our school. We have stipend funds for teachers to use in service of outdoor classes and projects, and plan on hiring an agricultural assistant to help them utilize these resources effectively. The Maker Space Barn is a space that will hopefully allow and encourage more teaching and learning to happen outside of our main school building where the traditional classrooms are located.

By incorporating a provision for an agricultural assistant into the grant, we hope to help ensure the long-term financial sustainability of the new building. This person will be responsible for helping teachers and students incorporate the new space into the curriculum during its inaugural year. We feel this is a key aspect of our plan to bring this new resource online. The agricultural assistant will help with the development of the curriculum and be a collaborative resource for teachers and will focus their efforts on expanding outdoor learning from electives to classroom instruction to our two week agroforestry units.

- D. Describe the feasibility review you engaged in during the development of your innovative pilot plan, including which aspects of the plan for the pilot were reviewed, which stakeholders were engaged, feedback received, and revisions made to the plan as a result of the feedback.

When we started working on our pilot plan, we had already been through an extensive approval process from the Maine Academy of Natural Sciences Board, Good Will Hinckley, our Planning Board, Zone Officers, and had reached out to several contractors for quotes on the multi-purpose barn. Because of this, we have already connected with and been approved by all of the key stakeholders for our pilot, and received feedback on the location, the financial needs, and the viability of the project.

On the student-facing side of things, we have spent a considerable amount of time this year reworking the curricula for our farming and permaculture intensives, and plan on strengthening these through our pilot plan. We have created opportunities for feedback from students and faculty on how to improve our Agroforestry intensives this year and have dedicated a significant amount of energy on improving the student experience, with an emphasis on more outdoor, hands-on experiences as well as celebrations of learning where students can showcase their projects, art pieces, and produce.

Section 4: Identify Key Expenses

- A. Identify the key expenses associated with the preparation, implementation, and ongoing refinement of your pilot.

Expenses could include staff time, materials, professional development activities, facilities, and other related expenses. This section does not need to include specific costs, but rather list out the different costs that should be considered to implement the innovation.

Multi-purpose Barn (supplementary funding) - \$80,000.00

Agriculture Assistant (stipend role) - \$15,000.00

Resources for Classroom Instruction & Outdoor Learning - \$5,000.00