



PROJECT RESILIENCE

Resilience Project Planning: **A Guide for Teachers**

> *“The kids were really motivated to do the project. They had ownership of it. They knew that after it was completed, they’d be able to say that they contributed something lasting to their school community.”*

-Adrianna Adams, Project Resilience teacher



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Image: Adrianna Adams
scied.ucar.edu/project-resilience



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Introduction

So you've decided to extend Project Resilience by implementing a student-designed resilience project at your school! Kudos for taking on what is sure to be an exciting and unique learning experience for your students! Your students will likely look back on this project as a highlight of their high school experience. But let's be honest, a task like this can also come with challenges and frustrations. This planning guide is a collection of helpful tips we learned during the pilot program, designed to help set you up for success. Good luck!

First Things First

The resilience project experience will be largely dependent upon creating a growth mindset environment for your students and your commitment as the project manager. Because every project is unique, and the most meaningful projects are those that the students come up with themselves, there are sure to be many unknowns that will require flexibility, resourcefulness, determination, and a degree of comfort with uncertainty. When challenges or setbacks arise, you'll need to be able to coach your students to adapt and have a good attitude, reassuring them that this is all part of the process when you are doing something new. Hopefully, the project will also be fun and rewarding, with lots of opportunities for students to practice real-world skills. The more engaged you are as the project leader, the more engaged your students will be.

Advance planning will increase the success of your project. We recommend beginning the teacher part of the project plan a full school year in advance. This will allow time to get your building administration on board and secure funding for your project. Looking ahead to the next school year can help you determine where to place Project Resilience within your curriculum sequence. Starting the Project Resilience curriculum earlier in the school year is probably best. You'll want to complete Lessons 1-7 of the curriculum with plenty of time left in the school year so that your students can experience the reward of project completion before heading off to summer break.

Make sure to allow extra time for:

- › Permissions or permitting
- › Creating and revising a design
- › Ordering and receiving materials
- › Contracting and scheduling laborers
- › Organizing volunteers

Keep in mind that some projects will require more time than others to implement. Once you have funding (which is discussed in the next section) and have worked through Lesson 7 with your students to design and select a resilience project, it can take between five to eight weeks to make the project happen. Depending on the scope of your project, there may be steps that take considerable time to implement. For example, the School Deck Case Study (pages 6-8) was put on hold for several months while the students waited for the school board to approve adding a permanent structure onto the school building. They also had to get their plan approved by district maintenance, who knew the location of buried electrical and plumbing lines, and had to wait for the availability of district-approved contractors to do the labor.



Students from South Terrebonne Highschool working together to create their outdoor learning and community space. Image: Adrianna Adams



Resilience Project Planning - A Guide for Teachers

Funding

You need funding to make this happen!

The good news is that there is lots of funding available to support education. The bad news is that it can be a lot of work to find it. Funding for our pilot project that covered student projects was part of the grant we received to develop the curriculum. While we didn't have to secure funding specifically to implement student projects, we expect that securing funding might be a hurdle you will face. We have pulled together the following tips and resources to help you.

- Start with your school and your district. It's possible that building funds could be allocated towards your project, especially if the resilience project your students choose improves an issue that has already been identified by facilities staff. With permission from your principal or supervisor, consider approaching the school board to request funding.
- Work with your PTA. The PTA is there to support you and your students and often has funds for special classroom projects. Team up with them for fundraising, or consider organizing additional fundraising efforts with your students specifically for the project.
- Approach school clubs that might benefit from the improvements your project will make, such as the science club or athletic clubs (for example, if you are improving drainage on a field). Clubs are usually great at fundraising!
- Find funding within your community. Because companies like to give back to their community, it can be helpful to look locally, at the city or state level. Examples of places that have historically supported education are: insurance companies, banks, Rotary clubs, Lions club, environmental coalitions, your local United Way, or hardware stores (like Lowes or Home Depot). Make a note of businesses listed as sponsors for local festivals, fairs, or community events, and consider asking them to support your project. A business with an established history of community involvement is likely to be interested in supporting a resilience project like this.
- Apply for teacher grants. There are grant opportunities specifically for teachers who are doing innovative work like this. We suggest you look for niche grants that focus on specific topics like science education, environmental action, resilience, or community service. There may be grants specific to your region that your project would be a good match for. Be aware that most grants have strict requirements and application deadlines. If you are new to the grant writing process, look for resources to support you, such as this NEA Foundation Writing Tutorial (<https://www.neafoundation.org/for-educators/grant-resources/writing-tutorial/>).

Teacher Grant Resources:

- › GetEdFunding: www.getedfunding.com
- › Grants for Teachers - Grantwatch: grantwatch.com/cat/42/teachers-grants.html
- › NEA Foundation: neafoundation.org
- › NSTA Awards: nsta.org/awards-and-recognition-program
- › Fund for Teachers: fundforteachers.org
- › Youth Service America: ysa.org/grants
- › Toshiba America Foundation: toshiba.com/taf/about.jsp
- › Donors Choose: donorschoose.org
- › STEMgrants: stemgrants.com

Additional considerations when applying for grants

Many grants will require a project budget as part of your application submission. If you are applying well in advance of starting Project Resilience, this may be challenging because the project has not yet been defined.

- Consider your school's facility improvement needs that are already identified to see if any of them would be suitable as a resilience project. Put together a budget estimate for one of these projects with the help of your building facilities manager, and use this to define your grant request.
- Contact funders directly for advice on how to apply for funding to support a project that students will soon be designing. Provide access to the Project Resilience curriculum (lessons 7 & 8 specifically) to help them understand your project goals.
- When applying, be sure to include the project selection process that your students will undergo to help describe the funding need. Explain how students will develop project proposals using the Project Resilience curriculum and that one project will be selected for implementation with input from key stakeholders (students, school administration, community members, etc.). Explain that the funds will be used to implement the selected project.



Gather support from your community!

There are key stakeholders within your school community (and beyond) that you will need to engage to be successful with this project. It is important to figure out sooner rather than later who will actually be doing the work at each step of the project. Capitalizing on the skills and expertise within your community will not only save you money, but can serve to strengthen your community. The information below is by no means exhaustive, but is a good place to start.

The support of your building principal is key.

The principal can help to make campus and facilities-related decisions, and they will need to approve any permanent changes you intend to make. The principal should be your liaison with the district and will know if approval at that level is necessary. Approach your principal well in advance to explain your goals and vision for implementing a student-designed resilience project. Consider having your principal sign a symbolic document in support of your project that outlines the steps and acknowledges that you, the teacher, are going to be the lead. Consider having your students present the school resilience plan (that they create in Lesson 7) to the principal. Maintain good communication with your principal throughout the entire process. Agree in advance about how this communication will happen, perhaps monthly meetings and then more frequently when project implementation is near.

Your building or facilities manager is another important person to have on your team.

After all, the school campus is ultimately their responsibility. Approval and support of the building manager can help make your students' vision for their project a reality. Plan to meet with the building manager well in advance of starting the Project Resilience curriculum to get ideas about what projects might be needed. Not only will they know where facilities challenges are on your campus, they also know the steps involved with making modifications to campus. For example, they will know where the electrical and plumbing infrastructure is located. They likely know when input is needed from district-level facilities officials. They can get you in contact with contractors and vendors approved by the district to hire for labor or purchase materials from and possibly help source materials. They might even be able to do some of the labor! They can advise your students as they create the detailed list of steps needed to complete their project and their materials list for the project plan (creating the list of steps and materials list is included in Lesson 8: Part 1), and provide invaluable input to make sure you are addressing the needs of all students (e.g., ADA requirements) and are meeting safety requirements. Plan to keep your facilities manager updated about the timeline once the project is underway.

Find people with skills related to your project who are willing to volunteer their time and expertise.

You and your students might find yourselves wearing new hats: engineer, builder, project manager, gardener, etc. Enlisting the help of experts who can look over your project proposals and offer suggestions, help you determine feasibility, or help you create an accurate budget can be invaluable. A good place to identify professionals with the expertise that you are seeking is with contractors that the district uses. Or ask if parents or people in your community or social groups have the skills you are looking for. Look for local organizations that do volunteer work or service work. For example, a local gardening club could help select which plants to install and help with the actual planting. Local colleges and universities might have clubs that could volunteer their knowledge or labor to help. Even school clubs or organizations like the Boy Scouts or 4H who are interested in earning volunteer hours could be helpful support. It doesn't hurt to ask, and this exercise in resourcefulness can be quite valuable for your students.



Resilience Project Planning - A Guide for Teachers

Student Involvement

Plan for student involvement

Involve your students in as many steps of the project as possible. Students can help make calls, send emails, document and report progress, keep track of the budget, and of course, get their hands dirty and provide labor.

If students will be providing manual labor to support the project, ensure that proper safety measures are in place. You may need to create a safety plan and submit it for approval by the school or district. In some cases, you may need parental permission for students to participate. Consider if there are tasks that require training from experts before students begin their work.

Create a variety of roles to allow all students to engage in the project. Some students will prefer using tools to build a garden bed, while others will prefer doing research about which native plants would be best to plant. If your project involves outdoor work or construction, consider administering a skills survey before the project implementation begins to determine the level of experience and interest your students have. Questions could include: Who has used a hammer before? Who has planted a garden before? Who enjoys filming or taking photos?

From the skills survey, you can identify students with experience and skills to fill leadership roles and create groups of students to divide up the responsibilities and tasks. Keeping the student groups consistent throughout the project will lead to self-directedness as students gain confidence and experience with their tasks. Establish a consistent system for check-ins and reporting progress, such as using a Kanban board, <https://www.pblworks.org/blog/ultimate-team-work-management-tool-kanban-boards> (Kanban board use is discussed in Lesson 8: Part 2).



Image: Adrianna Adams

More tips for success!

Below are a few additional tips that our pilot teachers and administrators shared after going through the project implementation process.

- › Be sure to have a plan for all of the labor that is needed, including ordering materials, assembling equipment, and cleaning up the project site at the end.
- › Become familiar with your district's spending process. Learn the process for ordering things online, getting quotes or bids, and paying contractors. Figure out if you will need to request purchases from the school finance department and, if so, how much time is needed for purchase approval, or if you need to purchase things and be reimbursed later.
- › Choose a project that isn't too far outside of your comfort zone. For example, if you are uncomfortable with power tools, either plan to hire out these tasks or consider steering students towards a project that utilizes skills that you are more comfortable supporting.



Resilience Project Planning - A Guide for Teachers

Appendix > High School Deck Project, Example of a Student Project

Storm Water Management Issues

Students at Terrebonne High School (THS) in Houma, Louisiana, identified an area outside their school that was prone to flooding during typical rainstorms. The area where school buses dropped off and picked up students often flooded, and when water pooled in this area there wasn't a safe, dry spot for students to congregate while they waited for their buses. The students who proposed this project researched the steps it would take to plan and build a deck, and they developed a draft budget for the project. Unlike other student projects, this deck project required working with an external contractor to do the work.

Below are the steps it took to complete this project, along with some lessons learned.



Research Potential Contractors

Obtain a list from the school district of approved contractors eligible to do work on school district property. Reach out to the contractors to get detailed quotes for the work.



Unplanned obstacle: All of the bids from eligible contractors were too high for our budget, and the rising costs of lumber made the initial budget the students developed inaccurate. We needed to get permission from the school district to work with a different contractor who could do the work for a lower cost.



Hire a Contractor

Select one of the approved contractors, work with the school or district administration on any necessary paperwork, and set up a contract for the project.



Unplanned obstacle: The selected contractor for our project needed to increase his insurance coverage in order to be eligible to work for this school district, which he was willing to do, so the district allowed him to do the project.



Agree to a Timeline for the Work to be Completed

Identify the length of time the project will take and agree to dates when this work will happen.

For the TPHS project, the school principal wanted the work to be done during a school break so it wouldn't disrupt the bus schedule. In addition, this work was done during the COVID-19 Pandemic. For public health reasons, the school administration wanted construction to be done when students weren't on campus. The contractor agreed to a one-week project during spring break.





Resilience Project Planning - A Guide for Teachers

Appendix > High School Deck Project, Example of a Student Project



Communicate with All Stakeholders

Have leadership from the school and the school district review and approve all plans before implementing the project.

We kept the school principal and the assistant superintendent in the loop so they were happy with the plans by the time they were finalized. In some projects, the building maintenance group needs to be included in communications as well.



Confirm Work Plans Close to the Start Date

Our team confirmed all project details in the two weeks leading up to the project start date



Purchase Materials and Supplies (if needed)

For our project, the contractor purchased all of the materials and supplies. If it's a project that will be implemented by students, school staff, or volunteers, materials need to be purchased in advance of the start date.



Touch Base with Contractor

During the project implementation, be available to the contractor if needed, check in to see how things are going, and address any challenges.



A potential obstacle could be inclement weather, which fortunately didn't happen during our project.



Project Completion

Do a walk-through to ensure the completed work is satisfactory, including confirming with the school principal and maintenance staff that they are happy with the result.

For this project, everyone involved was pleased with the results, and students began using the deck immediately after returning to school from spring break.





Resilience Project Planning - A Guide for Teachers

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Communicate Results and Successes

Once the project was completed, we shared photos with the school principal, the assistant superintendent, and the community. Communications with the community included social media and the local newspaper. We also gave a presentation to the school board to let them know about all of the student projects that were implemented at each local high school, including the THS deck project.



Post Project: Follow-up and Planning for Upgrades

The students noticed right away that they hadn't planned for seating on the new deck, and they were able to request seating that was in storage at a different school in the district. The project team also decided they want to extend the railing from the edge of the deck to go along one side of the ramp. They have put in a request for the maintenance team to build a railing at a later date.





Resilience Project Planning - A Guide for Teachers

Appendix > How to Create an Effective Rain Garden

Rain Garden

Rain gardens are an easy and attractive way to help alleviate drainage problems. By allowing excess water to filter into the soil slowly, they reduce the amount of pollutants entering nearby waterways. Rain gardens are just one example of a project that students can do to help with standing water and other drainage problems at their schools. Since there are many steps involved, the project naturally lends itself to students working together in teams.



Image: [LSU AgCenter's Stormwater and Your Rain Garden](#)

The process for creating and maintaining a rain garden

STEP 1: FINDING THE PERFECT SPOT

Students should work together to identify a location for their rain garden that is down slope from buildings. To be effective, the area should also stop and hold the water before it enters a sewer, road, or sidewalk, and be in full sun for at least six or more hours a day. Since digging will be involved, students should contact their local utility company to have utility lines marked, and work with the maintenance or horticulture department at their school to make sure that they have permission to dig in the selected area.

STEP 2: CHOOSING A SHAPE FOR THE GARDEN AND TESTING YOUR SOIL

After students identify their location, they will need to determine the preferred shape for their rain garden (a bean-like shape is fairly common). Marking out the shape of the garden using rope, twine, or other materials will allow the students to visualize the garden's location so they can make adjustments.

The soil will also need to be tested to make sure water will drain (this is another great opportunity for student observation and collaboration). To test the soil, locate the middle of your garden, dig an 8-12 inch hole, and fill it with water. Monitor this hole over 24-48 hours for drainage. Ideally, the water will drain within 24 hours. If the water is still in the hole at the end of 24 hours, one of two things need to happen for your rain garden to be effective at absorbing stormwater: 1) A new site can be located, or 2) you can plan to mix in sand to the soil to increase the rate of infiltration.

STEP 3: DIGGING OUT THE GARDEN AND ADDING SOIL

This will be a team effort! Following the established outline for the garden, students will need to dig down and remove the top 6-8 inches of soil, with the deepest part of the garden located in the center. A berm will need to be created to help direct the water towards the deeper center of the rain garden. Most soil types will require adding new soil or sand to your rain garden to support the native plants you will be adding.



Image © Dave H



Image © Nature Walk School

A photo of the berm preparation for a rain garden (left) and a photo of a completed rain garden with a berm along the back side of the garden (right) from The Cornell Lab's Yardmap article, [How to Create an Effective Rain Garden](#).



Resilience Project Planning - A Guide for Teachers

Appendix > How to Create an Effective Rain Garden

STEP 4: PLANTING YOUR RAIN GARDEN

One of the advantages of a rain garden is students can be involved in the selection and planting process, which allows them to see instant results. Native plants are ideal to use in rain gardens, and provide an opportunity to discuss the benefits for wildlife.



Image: © Alaska Region USFWS

Photos are from The Cornell Lab's Yardmap article, [How to Create an Effective Rain Garden](#).

STEP 5: MAINTAINING YOUR RAIN GARDEN

Once students have created their rain garden, they will need to help with maintaining the plants. Examples include watering the plants during dry spells, weeding, repairing (erosion), and pruning.



Image: [UConn Rain Gardens](#)

This information was compiled as a resource for Project Resilience using the resources from the Habitat Network (content.yardmap.org/learn/how-to-create-effective-rain-garden/) and UConn Rain Gardens (nemo.uconn.edu/raingardens/installation.htm). A step-by-step guide with additional resources is available at <https://bit.ly/project-resilience-rain-garden>.