Global Nomads Group

Collaborative Innovation Project Guidebook

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Collaborative Innovation Project: Introduction

What is a Collaborative Innovation Project?

A Collaborative Innovation Project, based on design thinking and project-based learning, is a GNG project that challenges students to work together to develop solutions to real-world problems. Within and across classrooms, you will collaborate with your peers to define a challenge in your local or global communities and develop a project that addresses that issue by promoting positive change and community engagement.

Collaboration is defined as two or more people working together towards a common goal. Collaboration on projects (with peers in class and/or virtually, locally and/or globally) should take place in ***at least*** one of the following ways:

- Share feedback and reflections on projects
- Share resources for projects
- Co-construct one project with peers

Collaborative Innovation Project Objectives:

1. To address an energy/environmental issue identified in students' local or global communities;
2. To use cross-cultural dialogue, media, and technology to deepen understanding of this issue through collaboration;
3. To generate a tangible solution to the chosen energy/environmental issue by designing and constructing a model or modify an existing model;
4. To engage local and global communities on the chosen energy/environmental issue by sharing projects and knowledge with wider audiences.

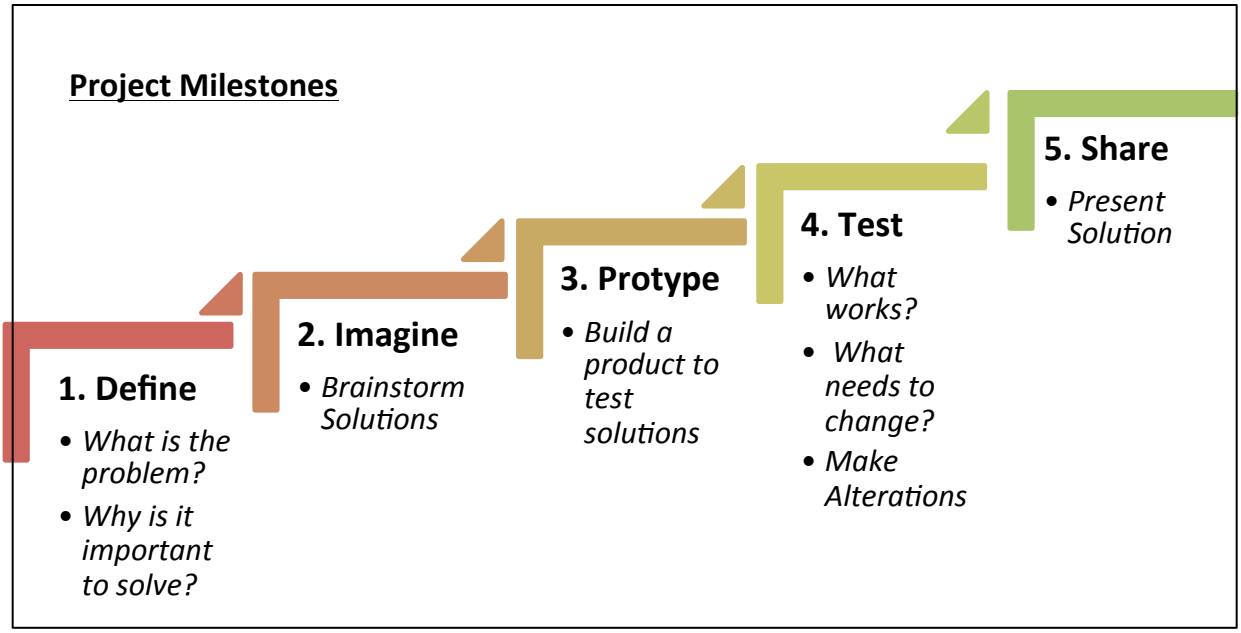
How will the curriculum support completion of the collaborative project?

You will be introduced to the Collaborative Innovation Project through a **Challenge Letter** (p. 7), calling all youth to become GLOBAL NOMAD INNOVATORS through completion of an action-oriented project that problem solves to provide practical solutions to energy/environmental issues relevant and meaningful to your local and global communities. The documents below[1] will support design, planning, and completion of the project and should be referred to throughout project conceptualization.

	Page
Criteria Wheel	p. 5
Project Team Roles	p. 6
Challenge Letter	p. 7
Project Guide	pgs. 8 - 9

Five Milestones, or accomplishments, outline the step-by-step process for project completion. An overview of each milestone appears in the chart on the next page and is fully elaborated on at the conclusion of this module. Upon completion of each milestone, refer to the **Project Guide** (p. 8-9) to fill in or update information. As a key component of each milestone, give and receive feedback to and from your peers.

[1] The framing and supporting documents presented in this Collaborative Project Module were based on or adapted from resources of the 2013 Buck Institute of Education, *PBL 101 Workbook*



The **Online Platform** will serve as the space for project communication, including sharing of feedback, ideas, and resources, between schools or groups. As each milestone is completed, post work to the corresponding section of the online platform, for feedback from peers. Once projects are complete, these should be shared with peers on the online platform.

The **Feedback Guide** will guide you in giving and receiving feedback from your peers. Revision should take place every time groups receive feedback, adjusting and updating the project guide and project activities as applicable.

Revision is when one changes or alters something in light of new ideas, suggestions, or evidence. In the Science Innovation project, students should revise the Project Guide and Activities every time peer feedback is received.

How long will the project take to complete?

The Collaborative Innovation Project will be introduced in Module 3, during which you will begin to brainstorm ideas based on community need. You should come to the in-person TechCamp prepared with project ideas and initial research completed.

Project Milestones one through four, from defining a project topic to testing a prototype, will take place during the 8-day TechCamp in June 2014. Then, you will continue to develop your projects through summer 2014, and with additional support from technology mentors in the US and Jordan. This will all culminate in completed projects and sharing to the Virtual Project Fair in September 2014.

What are the criteria and guidelines for the project?

The collaborative project **Criteria Wheel** (p. 5) outlines six elements of a strong and successful project that can promote deep community impact. Project completion depends equally on all criteria elements. The Criteria Wheel can be used as a rubric to perform peer and self-assessment throughout the project.

Criteria Wheel

The Criteria wheel outlines six elements of a strong and successful project and can be used as a rubric to perform peer and self-assessment throughout the project.

Mobilize	• Project answers the program's driving question. • Project positively engages youth and communities, within and beyond GNG programs and community, in an active way.
Investigate & Analyze	• Topic is relevant to your local and/or global community. • Inquiry deepens your understandings of people, places, and relevant issues worldwide.
Communicate	• Communication among peers involved in the project occurs throughout the project and in a timely fashion.

Collaborate	• Collaboration with peers (in class, nationally, or internationally) takes place in at least one of the following ways:
	  • Share feedback and reflection on projects
	  • Share resources for one another's projects
	  • Co-construct one project with peers.

Document	• Project creation and implementation is visually documented by students, for sharing with a wider audience. This could include picture, video, or written text (online or print).
Share	• Project is shared with other GNG program peers. • Project is shared with at least one additional group outside of GNG that is actively impacted by or involved in the project topic.

Project Team Roles

Identifying roles for each team member on the project will organize everyone's responsibilities around the project. Be sure every group member has at least one role!

Project Start → **Project Completion and Sharing**

Team Leader: You make sure all team members stay on task and meet deadlines! You are also responsible for communicating with your partner group(s) and/or GNG staff, as needed. As the team leader, you should keep your peers focused and on schedule, make sure your project attempts to solve your selected problem, is action-oriented, and involves positive collaboration, feedback, and reflection with your partner group(s).

Research Committee: As part of this team, you conduct or lead background research on the selected problem, which includes finding similar projects for inspiration and comparison. Make sure the project is accurate, relevant to your chosen topic, and has the information necessary to make it successful.

Example: In a project to reduce your community's trash output, the research committee might research how much trash the community currently produces, where the trash goes, what current recycling options exist in the area, etc.

Logistics Committee: As part of this team, you make sure that the group has all necessary supplies and materials needed for the project and your community/outreach event. You will also coordinate any travel needs, event planning, and/or any venue reservations required.

Examples: Reserve venue for film screening/exhibition/community event; hire bus or translation services; recruit volunteer to assist with film editing, etc.

Construction Committee: As part of this team, you coordinate the creation of content of the project. This doesn't mean you have to create all of the content yourselves; similar to the Research Committee, other group members may be assigned roles in the creation process.

Examples: Create blueprint, draft, and collect materials for project, which could be film, photos, posters, letter writing templates, or mural

Documentation Committee: As part of this team, you visually document the project – in its creation and/or completion. You will make sure it can be easily shared with online and face-to-face audiences to inspire other students to take similar action.

Examples: short film, time-lapse photography, etc.

Testing Committee: As part of this team, test the final prototypes and choose a prototype that best address the environmental issue.

Time to Get Started! Collaborative Innovation Challenge Letter

WHO ARE GLOBAL NOMADS?

Global Nomads fundamentally believe that all people, in all countries, from all cultures, are good. It's the misconceptions we're all raised with, taught or learned, that blind us to be otherwise. Global Nomads seek out these misconceptions and discuss them openly, honestly, and more importantly, face-to-face. Global Nomads are citizens of the world.

Calling All Youth:
Since 1998, Global Nomads Group has been connecting young people like you with their peers worldwide. Global Nomads – young people who embrace cross-cultural dialogue and celebrate both similarity and difference – are positively influencing their communities in over 50 countries, across all seven continents. Today, we ask you to join them as part of a Global Nomads Group program.

As a Global Nomad Innovator, we challenge you to bring global voices into your local conversations through connecting and collaborating with peers.

As a Global Nomad Innovator, you will:

- **Collaborate** with your peers to identify an issue that you want to **change** in your community.
- Use arts and media to **create** a real-world solution to this issue.
- **Share** the project locally and globally.

By taking action, you can become a Global Nomad Innovator, a citizen of the world.

Are you ready for the challenge? Through discussion with your peers, you will identify an environmental issue that impacts you, as a young person, in your local or global community and that you want to positively influence. Together with your peers, you will brainstorm, construct, and share your solution to the environmental problem you want to impact.

Throughout the project, you'll use the following project documents to guide your progress:

- **Five Milestones**, or steps, will help you plan and implement your project. The **Project Guide** will lead you through completion of each milestone.
- The **Criteria Wheel** will guide you in making sure your project includes all of the elements of a successful and collaborative effort with your peers!
- To streamline collaboration, review the **Team Roles** and make sure that everyone in your group has at least one role and responsibility for the project.

Be daring and creative, and don't be afraid to take risks. This is your opportunity to make a difference in the world in which you live. This is your opportunity to become a **Global Nomad Innovator**!

- **Global Nomads Group** Team

Project Guide

*As a **living document,** the **Project Guide** will lead the development of your project. Upon completion of each **milestone**, refer to this guide and fill in – **or revise** – the relevant information.*

A. Project Overview

Topic: _____

Title: _____

Environmental Issue: _____

_____

Problem Statement: *Based on your environmental Issue and goal, what is your problem statement?*

_____

Calendar: *(Note: If you are engaging in Interactive Videoconferences (IVCs), milestones should be completed and shared online one week before the related IVC, so you and your peers have time to give and receive feedback. You may have more than one milestone per IVC.)*

Milestone	**IVC Number and Date** *Ex: IVC 3, April 2*	**Milestone Due Date** *1 week before IVC (Ex: March 25)*
1- Define		
2- Imagine		
3- Prototype		
4- Test		
5- Share		

B. Target Audience

Who is the target audience? (ex: peers, teachers, community, family, country)

_____

Why is this target audience relevant to your project?

_____

How will we share our project with our audience? (ex: At local events? Online?)

_____

C. Team Roles

Refer to Project Team Roles, (p. 6), for additional guidance

Student Roles: *Record your group's roles here.*

Team Leader: _____

Research Committee: _____

Logistics Committee: _____

Construction Committee: _____

Documentation Committee: _____

Testing Committee: _____

Partner School Role (if applicable): *What do you need from your partner school?*

_____

_____

D. Activity and Materials Chart

Record the step-by-step process for completing your project in the chart below taking into account all student roles. Specify the materials you need, deadline for each step (keep the milestone deadlines in mind!), and committee responsible for each activity.

Activity (Step)	Materials/Resources Needed	Deadline	School Responsible	Committee Responsible
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

Collaborative Innovation Project: Milestones

Milestone 1: Define

TIME	MATERIALS
60 minutes in-class planning 45 - 60 minutes additional preparation (outside of class, if needed)	Challenge Letter (p. 7)

OVERVIEW
In this first milestone, you will identify an environmental issue in your local or global community and determine why it is important to solve.

INSTRUCTIONS

1. **Topic Selection Activity:** *What environmental issues in your local or global community do you want to positively influence with your project? Why are these important to you?*

   Propose an environmental issue: Decide/Vote on 1-2 issues(s) that you want to create a solution for.

   Issue(s): _____

   Why are these topics important to us? How do they connect to our lives and communities

   _____

   _____

2. **Define the environmental issue you intend to solve:** Once you have found an idea for your project, describe the issue by writing a **problem statement**. Your problem statement must answer three questions:
   a. **What** is the problem or need? _____
   b. **Who** has the problem or need?_____
   c. **Why** is it important to solve?_____

The format for writing a problem statement uses your answers to the questions above and follows these guidelines: **Who** need(s) **what** because **why**.

_____ need(s) _____ because _____.

Project Guide: Using the information recorded above to complete the **Project Guide** (pgs. 8 – 9), Part A: Project Audience and Part B: Team Roles.

CONGRATULATIONS!
✓ Milestone 1 is complete!

Milestone 2: Imagine

TIME	**MATERIALS**
60 minutes in-class planning 45 - 60 minutes additional preparation (outside of class if needed)	"Sample Projects" (p. 13) "Brainstorm" Worksheet (p. 14) "Need to Know" Worksheet (p. 15)

OVERVIEW

In this second project milestone, you will brainstorm solutions to solve the environmental issue you identified and defined in Milestone One. View sample projects to help guide you through imagining a solution to your selected environmental issue.

INSTRUCTIONS

1. **View Sample Projects**: *The Boy Who Harnessed the Wind* and *Biodegradable Soap* (p. 13).

   After exploring the projects, choose one to answer the following questions about:

   What did this project accomplish?

   _____

   _____

   What elements of this project helped it reach its goal?

   _____

   _____

   What could have been strengthened to better reach the overall project goal?

   _____

   _____

   In what ways do you think this project impacted its school and community?

   _____

   _____

2. **Brainstorm Solutions**:[2] Now that you have defined your issue and viewed successful projects, you need to brainstorm solutions, or ways to address your chosen issue. There are always many good possibilities for addressing an issue. Good innovators try to generate as many possible solutions as they can. Use the Brainstorm Worksheet (p. 14) to generate multiple solutions, individually or in groups.

[2] Adapted from: "The Engineering Design Process- Alternative Solutions," *Science Buddies*, 2013, http://www.sciencebuddies.org/engineering-design-process/alternative-solutions.shtml.

3. **Choose the Best Solution!**[3] Once you and your peers have created a number of possible solutions to your problem, you need to choose which one is best. For each solution, answer the questions below. Select the solution that generates the most "Yes" replies.

   - **Cost:** Will the people you are designing the solution for be able to afford the solution? Do you have enough money to build your prototype?
   - **Materials:** Do you have all the materials and equipment you need to create the solution, or will you be able to obtain them quickly and at a very low cost?
   - **Time:** Do you have enough time to complete your design and make it before the due date? Allow time for doing additional research and fixing problems. It is very rare for everything to work correctly the first time.
   - **Skill:** Do you have the skills to build and implement your solution, or can you learn them in the time available?
   - **Safety:** Is your solution safe to build, use, store, and dispose of?

4. **Need to Know List:** Now that you have chosen a solution you must decide what knowledge and skills you already have, and what you need to know in order to move forward with your project.

   Use the "Need to Know" worksheet (p. 15) to record this information. **Revisit and revise this list throughout the project**, checking off the list as you answer "need to know" items during research.

CONGRATULATIONS!

✓ Milestone 2 is complete

[3] Adapted from: "The Engineering Design Process- Best Solution," *Science Buddies,* 2013, http://www.sciencebuddies.org/engineering-design-process/best-solution.shtml#howtochoose.

Sample Projects

The Boy Who Harnessed the Wind:

Creating Currents of Electricity and Hope

- William Kamkwamba was born in Malawi, a country where land was withered by drought and hunger. William had read about windmills in a book called Using Energy, and he dreamed of building one that would bring electricity and water to his village. He believed this windmill would change his life and the lives of those around him. Using scrap metal, tractor parts, and bicycle halves, William created an operable windmill that eventually powered four lights.

- **Video:** http://www.youtube.com/watch?v=wGe65xwd-0c&feature=youtu.be

Bio-Degradable Soap

- Liseth and her friends from Cucuta, Colombia observed in their community that their soapy waste water caused pollution. They imagined living in a pollution free sustainable community. So instead of imagining, they did something! Liseth and her friends developed they're own biodegradable soap and encouraged people in their community to use it. Liseth and her friends showed how simple changes in our lifestyles could have a significant impact.

- **Video:** http://www.dfcworld.com/video.aspx?vidid=17

“Brainstorm” Worksheet

Use this space to brainstorm ways to address your chosen issue. **Remember:**

- **DON'T SETTLE FOR YOUR FIRST IDEA!**
- Try to generate as many possible solutions as you can before choosing the one you feel is the best. Do this by:
    - Examining existing solutions
    - Creating and using analogies
    - Conducting brainstorming sessions
    - Sketching and doodling

"Need to Know" Worksheet

Using your environmental issue, decide what knowledge and skills you already have, and what you need to know to complete your project. **Revisit** and **revise** this list throughout your project.

What do you **already know** about the issue?	What do you still **need to know** to solve your environmental issue? *Try not to answer the questions you need to know right away! This process will be part of your research.*	**Where** will you get this knowledge? *Examples: resources, partners school, interviews, site visits*	What **skills or equipment do you need** to create a prototype of your solution?

Milestone 3: Prototype

TIME	MATERIALS
60 minutes in-class planning 45 - 60 minutes additional preparation (outside of class if needed)	Building materials, Safety Contract (p. 17)

OVERVIEW

In this Milestone, you will outline the steps needed to complete your project. Identify team roles and draft a narrative project overview.

INSTRUCTIONS

1. **Review and Sign the Safety Contract** (p. 17).

2. **Identify Project Activities and Team Roles for Your Own Project:**
   Using notes on what made the sample project successful, list the team roles, the step-by-step process, and materials/resources needed to complete your own project. Be as specific as possible in outlining steps.

   Use the **Project Team Roles** (p. 6) to make sure **every person in the group has a role** in the project.

   Project Guide: Using the information recorded in step 2 above, refer to the Project Guide (pgs. 8 – 9) and record this information in Part C: Team Roles and Part D: Activity and Materials Chart

3. **Plan your prototype[4].** The planning and creation of your prototype will allow you to test how your solution will work and even show the solution to users for feedback. Remember that this is a mockup of your final solution, not the real thing. Be creative and troubleshoot! Take into consideration:
   - How will the prototype be made? By hand? Electronic simulation?
   - Will the prototype be actual size or scaled down?
   - What materials do you need? What will each part be made out of?

   Prototype: A prototype is an operating version of a solution. Often it is made with different materials than the final version, and generally it is not as polished. Prototypes are a key step in the development of a final solution allowing the designer to test how the solution will work.

4. **Create your prototype!**
   Gather materials that will be needed to construct the prototype.

CONGRATULATIONS!

✓ Milestone 3 is complete

[4] Adapted from: "The Engineering Design Process- Prototyping," *Science Buddies,* 2013, http://www.sciencebuddies.org/engineering-design-process/engineering-design-prototypes.shtml.

Safety Contract

I_____, certify that on this date**_____,** I have successfully completed a review of safety procedures for a Sciene Innovation Project. I agree to follow the safety guidelines listed below, and I will take every necessary precaution to operate safely throughout my project.

1. *Think safety before you start.*
2. *Know the locations of the fire extinguisher, telephone, and first aid kit in the event of an emergency.*
3. *Never eat or drink while constructing your prototype.*
4. *Keep electrical equipment away from water.*
5. *Use proper safety protection including goggles and gloves. Tie back loose hair and clothing when working with any chemical, flame, or heating device.*
6. *All sharp objects should be discarded in a sturdy container.*
7. *Do not touch, taste or inhale chemicals or chemical solutions.*
8. *Respect all life forms. Do not perform an experiment that will harm an animal.*
9. *Always wash your hands after working*
10. *Any projects involving drugs, firearms, or explosives are not permitted.*
11. *Any work that could be considered dangerous should be conducted under the supervision of an adult.*

I understand and agree to the above and all other safety precautions presented to me in class. I am hereby ready to undertake my project with safety from this day forward.

_____

Student's Signature, Date

Milestone 4: Test

TIME	MATERIALS
60 minute in-class planning 60 - 75 minutes additional preparation (outside of class if needed)	Prototype Feedback Guide (p. 19)

OVERVIEW

In this Milestone you will share your prototype, get feedback from peers and experts during the TechTorrent presentations, and update and revise your project plan as needed.

INSTRUCTIONS

1. **Test your prototype:** You will likely test your prototype, find issues with it, and make changes to address the issues you found. This is a key part of creating a successful solution and might happen several times before you settle on your final design.

2. **TechTorrent Presentations:** You will present your prototype to guest experts in science and technology. Presentations should be 5-8 minutes in length and give experts and peers a nearly complete vision and understanding of how the product addresses the environmental issue you chose to address. Use the **Feedback Guide** to give and receive feedback.

3. **Feedback, Reflection, Revision:** Based on feedback from the Tech Torrent Presentations, refer back to the Project Guide (p. 8-9) and update this document accordingly:
   - Review your "Need to Know" list (Milestone 2). What have you learned and what do you still need to know to complete your project? Are there new questions or subjects that you need to investigate?
   - Is your project addressing all six elements of a successful project according to the Criteria Wheel (p. 5)? If not, what elements of your project still need to be addressed to ensure your project is meeting the relevant criteria.
   - Make a plan that accommodates all needed changes for project development through summer 2014.

CONGRATULATIONS!

✓ Milestone 4 is complete

Feedback Guide[5]

Use the categories below to provide feedback on your group or partner's project or milestone. Remember to give constructive feedback that is respectful and includes specific ideas for growth, instead of general praise or criticism.

I hear/see…
What do you observe? Does the project attempt to solve the chosen problem? Do you think it can help lead to a feasible solution to the problem?

_____

_____

_____

_____

_____

I want more of…
What do you want to see expanded or enhanced? What works to achieve the goal and what seems unnecessary?

_____

_____

_____

_____

_____

I wonder…
What questions do you still have? What could strengthen the project? How could it more specifically address the environmental issue?

_____

_____

_____

_____

[5] Adapted from: Buck Institute of Education. *PBL 101 Workbook*. California: Unicorn Printing Specialists, 2013.

Milestone 5: Share

TIME	MATERIALS
60 minute in-class planning 60 - 75 minutes additional preparation (outside of class if needed)	"Call to Action" Worksheet (p. 21)

OVERVIEW

In this final collaborative project activity, you will gather any additional content needed, and finish the creation of the final product. Then, you will implement a distribution plan to share with multiple audiences.

INSTRUCTIONS

1. **Finalize the Product**: Based on feedback from peers and experts during the Tech Torrent presentations, move forward with creation of the final project. You should be able to answer the following upon completion of the project:
   - How does this project address my target audience and their needs and/or interests?
   - How is this project a solution to the environmental issue my peers and I are addressing?

2. **Craft a Distribution Plan:** Based on target audience (Project Guide, Part B) complete the "Call to Action" planning worksheet to identify where and how to share your project with your target audience.

3. **Keep Going!:** You have completed your final product, but make sure to share it with multiple audiences beyond your partner group! Share in local events, during the Virtual Project Fair, and more!

CONGRATULATIONS!

✓ Milestone 5 is complete

"Call to Action" Planning Guide

WHO:

- ✓ Who is the target audience? (Hint: See Project Guide, Part B: Target Audience)

WHY:

- ✓ Why is this an important target audience?

HOW:

- ✓ How will we engage this audience? (i.e. in what format? Film screening, art showcase, poetry reading, food festival)
- ✓ Where will we hold this event?
- ✓ On what day and time should we plan this event? Is this the best time to engage our target audience?
- ✓ How will we advertise our event to our target audience?