## Part I: Audience

**Who is your classroom audience? Age level, grade level, content area?**

- Grade 9
- Subject: Life science - Ecology

## Part II: Learning Standards

Choose examples of learning standards that you wish to introduce, directly teach, or reinforce through a project. What do you hope students will be able to do by the end of this lesson?

### Ca. Content Standards: Ecology

6b. Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size.

6d. Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration.

At the end of the lesson students will

- Create a compost and mini-garden in school.
- Create a video of how to do self-watering container.
- Write an essay about how they think making a mini-garden will make an impact in community garden.

## Part III: Essential Question

What essential question will guide your students’ project-based learning? For more on writing essential questions visit: [http://www.greekforme.com/writing.html](http://www.greekforme.com/writing.html)

1. How to make a compost and what is the use of this in gardening?
2. What is community garden? How can I help as a student in community garden?
3. What is Sustainable Agriculture? How it can help in my community.

## Part IV: Alignment with GED

List here your considerations for aligning your lesson and project with the GED. Does your plan allow for some test preparation.

1. Students will understand all about what composting is.
2. Students will create a compost using biodegradable material.
3. Students will appreciate the importance of plants as it gives oxygen and food.
4. Students will research about the population of Sustainable Agriculture and community Garden and present it through graphs.
5. Students will list all the positive impact of organic gardening/farming in the environment and health.
6. Students will know that the reproduction from seed is sexual production while asexual reproduction is vegetative propagation.
7. Students will create a table with definitions and drawings about the artificial ways people can do to reproduce plants

## Part V: Overview of Project

Give a brief overview of your project here—what will students be doing and what will the outcome of the project be? (a report, presentation, blog, demonstration, etc.) Who will the audience be for the final presentation?

- Students will research about composting, make a report in class and create their own compost.
- Students will create a video presentation about how to do a self-watering container and post it in YouTube or show the presentation in classroom.
Part VI: Design the Learning Activities

Design specific learning activities students might undertake to address or solve this project problem while working towards the learning standards and competencies. Decide on what resources could be used as part of these activities. Be sure to include what the student product will be.

1. Students will be in groups of three. A list of questions will be given as a guide for research.
2. Each group will present a PowerPoint presentation about composting.
3. Students will present and explain composting, different types of composting, new developments about composting, and impact to the environment.
4. Students will read on the internet about Sustainable Agriculture. Research and graph about the development of Sustainable Agriculture and number of communities in every state who are doing SA.
5. Students will watch videos about the water, carbon and nitrogen cycles and write a paragraph to explain the process of the cycle.
6. Students will write an essay about the impact of mini-gardens in their life, community, environment, and what it implies about their leadership skills.

Part VII: Assessment & Student Self-Reflection

How will you assess student progress towards competencies and standards? Will you create a rubric to help guide students?

A rubric will help me assess my students. (see rubric on page 3)

How will you build in student self-reflection? How will you build in room for your own reflection as a teacher? How will student work lead you to new or different instructional choices?

<table>
<thead>
<tr>
<th>Student’s Reflection</th>
<th>Teacher’s reflection</th>
<th>Different instructional choices</th>
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</table>
| Write down the students’ knowledge about composting, Sustainable Agriculture, self-watering container, vegetative production, water, carbon, and nitrogen cycle. | ● What worked in this lesson? How do I know?  
● What would I do the same or differently if I could reteach this lesson? Why?  
● What root cause might be prompting or perpetuating this students’ behavior?  
● What do I believe about how students learn? How does this belief influence my instruction?  
● Is this the most efficient way to accomplish this task? | ➢ Scaffold / graphic organizer/ thinking maps-(Advantages) composting  
➢ Modelling- water, carbon, nitrogen cycle  
➢ Cooperative learning- group presentation of a self-water container  
➢ Independent of reading and writing – Independently reading about the Sustainable Agriculture and writing about the impact of SA in community gardening and how this effect in their leadership skills. |
| What do students want to know about composting, Sustainable Agriculture, self-watering container, vegetative production?  
How does the water, carbon, and nitrogen cycle work and affect our environment?  
What are the impacts of the topics: composting, Sustainable Agriculture, self-watering container, and vegetative production?  
What did they learn about the water, carbon and nitrogen cycle? | | |

Part VIII: Community Connection

Finally, how will you and your students share this project with the community? What community? (Since we all just started planting, we will be all waiting the community connection and this will be implemented after the vacation/ September or 4 – 6 months the least.)

After the mini-garden activity project and self-water container project, students will go to their communities, and contact the important person who they think will help the implementation of community garden. An open house activity for school will be conducted so that people in the community will see their project. Showcasing their skills and product will enable the students to prove to themselves that they are capable and ready to be leaders who can help, accomplish, and support a community garden.

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## Project-based Learning Rubric

<table>
<thead>
<tr>
<th>Score Levels</th>
<th>Content</th>
<th>Conventions</th>
<th>Organization</th>
<th>Presentation</th>
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</thead>
</table>
| 4            | - Is well thought out and supports the solution to the challenge or question  
- Reflects application of critical thinking  
- Has clear goal that is related to the topic  
- Is pulled from a variety of sources  
- Is accurate | - No spelling, grammatical, or punctuation errors  
- High-level use of vocabulary and word choice | - Information is clearly focused in an organized and thoughtful manner.  
- Information is constructed in a logical pattern to support the solution. | - Multimedia is used to clarify and illustrate the main points.  
- Format enhances the content.  
- Presentation captures audience attention.  
- Presentation is organized and well laid out. |
| 3            | - Is well thought out and supports the solution  
- Has application of critical thinking that is apparent  
- Has clear goal that is related to the topic  
- Is pulled from several sources  
- Is accurate | - Few (1 to 3) spelling, grammatical, or punctuation errors  
- Good use of vocabulary and word choice  
- | - Information supports the solution to the challenge or question.  
- | - Multimedia is used to illustrate the main points.  
- Format is appropriate for the content.  
- Presentation captures audience attention.  
- Presentation is well organized. |
| 2            | - Supports the solution  
- Has application of critical thinking that is apparent  
- Has no clear goal  
- Is pulled from a limited number of sources  
- Has some factual errors or inconsistencies | - Minimal (3 to 5) spelling, grammatical, or punctuation errors  
- Low-level use of vocabulary and word choice  
- | - Project has a focus but might stray from it at times.  
- Information appears to have a pattern, but the pattern is not consistently carried out in the project.  
- Information loosely supports the solution.  
- | - Multimedia loosely illustrates the main points.  
- Format does not suit the content.  
- Presentation does not capture audience attention.  
- Presentation is loosely organized. |
| 1            | - Provides inconsistent information for solution  
- Has no apparent application of critical thinking  
- Has no clear goal  
- Is pulled from few sources  
- Has significant factual errors, misconceptions, or misinterpretations | - More than 5 spelling, grammatical, or punctuation errors  
- Poor use of vocabulary and word choice  
- | - Content is unfocused and haphazard.  
- Information does not support the solution to the challenge or question.  
- Information has no apparent pattern.  
- | - Presentation appears sloppy and/or unfinished.  
- Multimedia is overused or underused.  
- Format does not enhance content.  
- Presentation has no clear organization. |