**YouthBuild Final Project Template**

**Designing a Project-Based Learning Lesson for your Content Area**

*Directions: You are to choose one area of Green Building (Water; Energy; Land; Food) from the course to design a Project-Based Lesson around for your content area.*

**Part I: Audience**

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

Students ages 18 to 24 years old.

GED

**Hydroponic Gardening in the 21st century: Students will learn the basics of contemporary hydroponic indoor gardening and plant growth.**

1. The use of indoor areas for hydroponics gardening
2. Types of hydroponics: Ebb and Flow Water Farming, Fogponics, Aquaponics and Aeroponics
3. Basic requirements for home hydroponics garden
4. Different soil or medium requirements, watering, pollination, and pest control techniques, ambient temperature
5. The use of Light
6. The use of recycling materials: Such as water, containers (plastic cups), rocks etc.

**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?*

**MN GED**

Students will learn to grow consumable vegetables using the "Deep Water Culture" hydroponic method. This project will be done in the classroom.

1. Students will learn how plants grow (Plant parts and cycle of growth)
2. The importance of light in the process of plant grow (photosynthesis)
3. Pollination

The students will be required to read from at least 3 sources: book, science magazine articles, internet information. It will be an option to interview an experienced hydroponic grower. They will complete hydroponic research and write up their findings.

**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)*

- What is indoor gardening or hydroponics gardening?
- What can you grow indoors?
- What materials do you need?
- What are the benefits of hydroponics gardening?
- What countries have developed hydroponics gardening?
- Why is hydroponics seen as the 21st century futuristic gardening?
- Is hydroponics part of NASA space research? Why?
**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?

Science:
1. Student will learn how plants grow (Plant parts and cycle of growth)
2. The importance of light in the process of plant growth (photosynthesis)
3. Pollination

Reading and Writing: Students will complete research on hydroponics gardening and write a final summary on what they have learned.

Rubric Grading: Will be based on presentation. (Student can use visuals, poster or PowerPoint presentation).

**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?

1. Students will do a group presentation on type of hydroponics plant growth.
2. Students will monitor hydroponics classroom garden: Hot pepper and Basil.
3. Students will present classroom hydroponics to school staff and answer questions.

**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.

“Deep Water Culture” hydroponic method. This project will be done in the classroom.

Resources:

Homemade hydroponics - How to make a deep water culture (DWC) system (YouTube 9 Minutes video)


School Recycled Materials:

From science classroom old fish tank and fish tank pump.
Student will monitor light, nutrients and water. And write in their journal their daily observations.
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?

Students from each group will find definitions of words given by teacher. Use of printout information to find definition. Student will complete KWL evaluation sheet at beginning of project and at end of project.

**Presentation Rubric:**

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<th>Possible Term Sets</th>
<th>Exemplary</th>
<th>Accomplished</th>
<th>Developing</th>
<th>Beginning</th>
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<td>Adequate</td>
<td>Needs Work</td>
<td>You’re Fire</td>
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<tr>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>Needs Improvement</td>
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<td>Exceeds</td>
<td>Meets</td>
<td>Approaches</td>
<td>Does Not Meet</td>
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</table>

**Task Description**

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<tr>
<th>Dimensions</th>
<th>Exemplary</th>
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<th>Developing</th>
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Comments:
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?

1. Teacher grades KLW sheet and discuss individually with students about presentation paper and Lab work. Evaluation is done using class Rubric requirements.

2. The teacher will review the objectives and goals with the class and reflect in outcomes of project.

Teacher reflection and instructional choices:

As a teacher I should be prepared to modify and adapt the lesson or Unit to fit the needs of all students no matter what their achievement level or disability maybe. IEP students will receive one on one help and an extension of time will be provided to help them finish assignments and hands on projects. PBL is an excellent method to help and guide students to learn.

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Part VIII: Community Connection

Finally, how will you and your students share this project with the community? What community?

If our hydroponic gardening is successful we will share our classroom grown vegetables with the school students and staff. Students will explain other students how hydroponics garden works.