Lesson 6 Reflection on the community needs: Project Charter

Essential Question: How can I organize all of the information that I have gathered into a compelling document?

Standards

NGSS HS. Engineering Design

Students who demonstrate understanding can:

HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants**.**

ETS1.b: Developing Possible Solutions When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts.

Common Core State Standards Connections:

ELA/Literacy – SL.11-12.1c - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on *grade 8 topics, texts, and issues,* building on others' ideas and expressing their own clearly. Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.

ELA/Literacy –SL.11-12.1d. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on *grade 8 topics, texts, and issues,* building on others' ideas and expressing their own clearly. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

Materials

- Multimedia presentation
- Student Sheets
- Student notebooks
- Student debrief slips

Activities			
Activity	**Name of the Activity**	**Photocopies**	**Materials**
1	Preparation for Class - 1.3 and 1.8- Teacher Toolbox. Assigning Team rolls- 1.13 Teacher Toolbox- Roles and Responsibilities.		Student page
2	Standards Statement (Option: Unpacking the standards Teacher toolbox 1.12- Unpacking the standards)	6 Student Sheet	PowerPoint Presentation 6 Project Charter Planning Document
3	Project objectives and other projects		PowerPoint **Student notebook with documents from previous lessons**
4	Compilation of information into the Project Planner Charter.		PowerPoint Presentation Information from activity 3 6 Project Charter Planning Document
5	Reflection and Formative Assessment	Student debrief slips	PowerPoint Presentation Notebook Formative Assessment Sheet

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Overview

Throughout the Service-Learning module, the students have been exploring their community and have a good compilation of qualitative and quantitative data about the demographics and needs of the community. They have:

- Interviewed peers and community members and have a narrative complied that reflect the community culture.
- Made observations about the community and members who have special needs.
- Compiled the demographics about their community that reflect socioeconomic needs.

In this reflective lesson, the students will be taking this information and further condense it into an action plan called a Project Charter which will be the underpinning of their service-learning project.

Major Concepts

- Summarizing quantitative and qualitative data
- Project Charter

Objectives

Students will:

- Summarize community qualitative and quantitative data into a document called a Project Charter
- Evaluate and explain the flow chart of tasks that need to be completed and determine next steps.
- Continue to build notebooking reflection and teaming skills.

Lesson Preparation

Preparation

- **Lesson Preparation**: For specific directions on preparing lesson materials, see 1.3 and 1.8 documents in the Teacher Toolbox.
- **Instructional Resource:** Make sure that you have the *PowerPoint presentation* ready for class viewing.

Procedure

Activity 1: Preparation for the Class

Multimedia Presentation: This lesson will have a multimedia presentation that will help to get the students thinking about the lesson and walking them through the information. Download the presentation in the folder.

Preparing the notebooks- see document 1.3 in the Teacher Toolbox for specific instructions concerning notebooking.

Team Roles and Responsibilities- For more detailed information about team roles; use 1.13 Teacher Toolbox Team Roles and Responsibilities.

Activity 2: Unpacking the Standards

Class Explanation: The major focus is that they are compiling the information they have gathered to this point and realize that the engineering design process gives structure and information gathered through data is essential to a useful service-learning experience.

Note to Teacher: Look above to see the standards that will be addressed through this lesson. The students need to understand the focus of the lesson, so an examination of the standards is a way of addressing this lesson essential.

Here is a possible Standard Statement which incorporates the standards used in this lesson:

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*Students will examine how all of the data gathered to this point is an essential part of
a successful service-learning project. They will also see how speaking and listening
skills are an important way of gathering important information to create a plan to form
a solution to an engineering problem.*

Optional Lesson Component: As an additional component for this lesson, you may use Teacher toolbox 1.12- *Unpacking the standards in a Student Centered Classroom*. This gives procedures to help your students create their own standards statement.

- Pass out the student sheets

Activity 3: Discussing the Objectives for the project and other programs

Note to teacher: Through all of the information that the students have compiled they have yet to complete two essential elements. They must determine if there are projects or programs already in the community that could fill the needs of the stakeholders and they need to develop a list of objects for the project. Before the students begin the Project Charter document, they will need to discuss these elements.
Instructions: As we are compiling the information we have gathered from the work we have completed thus far, we still have two more pieces of information that must be investigated.

In Groups Discussion:
> **Community Programs in Place:**
> **1) Are there existing projects or programs in the community that might meet the needs of the stakeholders?**
> Students will discuss this question using their student sheets and write the information on that document.
> **2) Are the programs in place efficient?**

> Students will discuss this question using their student sheets and write the information on that document.

> **Whole Group: Groups will share important information with the group.**
> What decisions were made in your group about the existing programs in the community and how effective they are?

In Groups Discussion:
> **Project Outcomes and or Deliverables:**
> **1) What are you hoping to accomplish with this project, this would include addressing the goals and any constraints that you have identified? Will there be a product? What is that product?**

> **2) What are the immediate expectations for the project?**

> **3) What are the long-range expectations for the project?**

> Students will discuss this question using their student sheets and write the information on that document.

> **Whole Group: Groups will share important information with the group.**
> What decisions were made in your group about the existing programs in the community and how effective they are?

In Groups Discussion:
> **Project Duration:**
> **1) What is the duration of the project?**

> **2) Time constraints of the project?**

> **3) What is the time frame to complete this project?**

> Students will discuss this question using their student sheets and write the information on that document.

> **Whole Group: Groups will share important information with the group.**
> What decisions were made in your group about the existing programs in the community and how effective they are?

Activity 4: Application of the EPICS Engineering Design Framework using the Project Charter

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Introduction: Throughout this project identification phase of your design process you have written narratives or short reports that describe what you have discovered and your decisions through the design process. This has helped you keep track of your progress with all of that information in your notebooks. This is an essential part of any engineering design and it also helps other engineers to understand the goals of the team so that they can help, evaluate, or continue the project if there is a change in personnel.

1. We know that we are in the *Project Identification Phase* of this project.
   Discussion: What are the sections of the Project Planner that we can already identify from the information that we have already gathered?
   Note to teachers: In this phase the students will be taking the information they have gathered from their narratives and condensing them into statements that will be used in a Project Charter. When using the EPICS Human-Centered Design model, we are in the Project Identification Phase.

   1. **Engaging prior knowledge-** Within your groups, discuss any interesting facts that you learned from the data you have collected this far. Because there is a sizable amount of data, it may be necessary to divide the workload within the group. Have each person summarize each of the information that has been gathered.
      - Students will need to have their notebooks and data available for analysis.
      - **Discussion:** What information that you have gathered is surprising to you.
         Are you seeing any areas where you will need to ask more questions to determine possible community partners and their needs?

   1. **Sharing important findings from the data with the group.**
      What information did you gather about the community that might be useful to determine needs?

   2. **Whole Group:**
   Introduction: In this next phase of the Project Identification Phase we are going to take the information that we have gathered and condense it into a document that will guide our project. This is a Project Charter.
   You will be using the Project Planner Document as a guide to complete this process. When using this document, you may need to just notate where the information is located within your notebooks so that you can find it later when you complete your Project Charter.

   Instruction: Use each section of this planning document as a guide to determine the information that will be needed to be explained in each section.
   In groups:
   - Have the students divide the document into sections with each student being the "expert" for that section.
   - Give a time frame for each section.
   - At the end of that time frame each student will share the information that they have gathered with the group who will then complete their own sheet. It is essential that all students have all of the information written in their notebooks so that the project is well documented.

   Note to teacher: In red you will find a description of the information that would be appropriate in that section. Use this to help the students as you circulate around the room as they are working in their groups.

Statement of Purpose: What is the compelling need for this project? What are the objectives and motivation for this potential project?	What is the need described by the stakeholder or identified by the team?

Statement of Purpose:

Description of the need:

Stakeholders Basic Requirements	What if any project or program requirements were given to you by the stakeholder for this project?
	Where there any special considerations that need to be address to fulfill the needs of your stakeholders?

Community Partner	Who are Community leaders who will be actively involved in this project?
The students will use their observations, Interviews and narratives to complete the requirements that are needed	Through the interviews the students may have been given specifications that the stakeholder would like to
The students will list the community partners and the contact information that will be essential for continued	Through the observations, the students may have been seen specific needs that will help the stakeholder. The

Community Profile-	Demographics of the Community
	The students may not have this information yet about the community leaders who are involved in the project. This
	for this community?
	Describe the geographic area and how that impacts the project.

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The students will be looking at the information that they have gathered from their research concerning demographics to create a paragraph about the community.

Identified Existing Projects or Programs-	Identify existing programs in the community that might meet the needs of the stakeholders.
The students have been concentrating on determining need and may not have explored this part of the process.	
Discussion: What are present projects or programs in the community?	Are the programs in place efficient? If not, describe the needs that are not realized.

Duration: What is the timeframe for the project?	How long will the team work on the project?
Remind students that a project does not have to be done in a semester or even in a year. When the teams do a complete needs assessment, and compile the information from the project within notebooks, the project can be continued from year to year and have a huge impact on the community because of its complexity.	

Outcomes: What are you hoping to accomplish with this project, this would include addressing the goals and any constraints that you have identified.	What are the immediate expectations for the project?
Students will solidify what their expectations are for the project. Remind them to identify any constraints that must be identified to be able to successfully complete the project.	What are the long-range expectations for the project?

Activity 5: Wrap-Up: *Reflection and Formative Assessment*

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1) **Back to the Standards:**
   Go back to the original class document about the standards.
   Ask the students:
   - o Did they create a Project Charter that compiles the information they have gathered in an outline form?
   - o Did this activity help the students determine more information that is needed for the project?
   - o Use speaking and listening skills to be able to synthesize the information from the interviews, observations, demographic data and socioeconomic information into a reflective document?

2) **Formative Assessment and student reflection**: Last 5 minutes of class
   - Pass out the *student debrief slips*. This will give you an idea of what they have learned in the lesson.
   - Make sure that they students have their *notebooks open* with their two sheets taped in their books.

   Notebook check:
   As the students are filling out the slips, walk around the room and check to make sure that the student have the following information in their notebook:

   - ✓ Completed 6- Project Charter planning document.
   - ✓ Completed the 6- student sheet with additional information recorded?
   - ✓ Have the students turn in the debrief slip?

   3) Teacher Reflection: Look at the student's debriefing slips, the Project Charter and the student notebook. Have the students accomplished the objectives for the lessons?
   - *Questions:*
   - ✓ Have the students expressed an understanding of the basic needs of the community and created an outline document through the Project Charter planning sheet that will help them create their project charter?
   - ✓ How are the students reflecting in their notebook?
   - ✓ Are the students able to work effectively and efficiently in their groups?
   - ✓ Are there any interventions that may need to happen to improve these skills?
   - ✓ Are the students showing self-efficacy when reflecting on their own learning in the class?

Resources:
- EPICS Design Process (2009) Purdue University.
- NGSS Lead States. (2013). Next Generation Science Standards: For States, By States. Washington, DC: The National Academies Press. For more information see http://www.nap.edu/NGSS/
- National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for English language arts and literacy in history/social studies, science, and technical subjects.* Washington, DC: Authors.

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