EPICS ∥ HIGH

Use of Scenarios- Abbreviated Lesson Plan

Activity Type	Interactive learning Role-play Self-assessment
Big Idea	Engineers must have a deep understanding of the needs of the community to create projects and products that improve the standard of living of the underserved within the community.

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. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

Lesson Goal	Students will experience the use of scenario and persona along with using a prototype as an interactive tool with the potential community partners.
Essential Questions	• What are scenarios and personas and how are they used to help us understand a need within the community? • How can we create a prototype that can be used as a dialogue starter with the stakeholder?
Content Overview	Students will: • Create a prototype • Use scenarios as a way of empathizing with an underrepresented members of the community. • Practice the use of prototypes as a way to gather more information from the stakeholders and more adequately meet their needs.
Assessment	Students will use the scenarios to empathize with a stakeholder and be able to create a prototype that will help them visualize how this lesson could be used with their own students. ***Formative Assessment:*** ***Exit Slips:*** use of the Exit slips for the students to give feedback related to their understandings of the use of prototypes. ***Teacher Reflection:*** Reflecting on the use of the prototype and the information that the students are gathering about from and about the stakeholders, and the potential project.
Objectives	• Identify situations that impact the standard of living in the community by using the prototype as a communication tool. • Utilize the feedback from the stakeholders to redesign the prototype of the project. • Explore using Scenarios and Personas as a way of personalizing the stakeholders within the community.
Materials	EPICS Scenario Cards Fastener items (pipe cleaners, rubber bands, paper clips, string) Surface items-(Cardboard squares, tag board, construction paper, balloons, coffee filters) Structure items-(straws, tongue depressors, wood skewers, tin foil)
Preparation & Management	Create the challenge bags for each group, which will include the materials listed above.

Student Procedures	1. Make sure that the challenge bags are on the tables with 1 bag for teams of 3 to 4. 2. ***Introduce the Activity.*** In the design process, one of the most difficult pieces is determining a project that would be successful that would: • meet the needs of a group in the community, • pique the interest of the students • deliver the academic content that will fulfill educational requirements. As the students are working to create a needs assessment for their community they will explore your community in detail to bring enough information to be able to make a qualified decision about how to proceed with a given project. The goal of the first Unit in the EPICS curriculum is to have a completed needs assessment that would be the starting point for a Service-Learning project. This activity is used as a preliminary challenge to get the students to understand needs within the community and explore the use of scenarios, personas and prototypes as communication tools. 3. **Scenario Cards-** A scenario and a persona is a great way for students to be able to empathize with their stakeholders and visualize the potential project. In this module, the students will be creating their own personas and scenarios to put a face with the project. • Pass out cards- 1 for 3-4 people. • Read through the scenarios. • Discuss the information you have been given. • What do you view as the problem? • Sketch out a design. 4. **Build the solution to the scenario (15 minutes)** • Use the materials in your bag to build a prototype. • Discuss the prototype with your partner. • Discuss the prototype with your team. 5. **Presenting your best solution to your scenario** • Explain your scenario. Who is your potential project partner and the problem? • Explain how your prototype would meet the needs of the stakeholder. • In your group be ready to explain your prototype and the different solutions to the group. Remember that no one answer may be the best for the situation.
Wrap-Up	6. **Reflection** **Discussion of the Essential Questions:** • How is the prototype useful for students to visualize a potential project? • How are the discussions that the prototype facilitates helpful for understanding more about the stakeholder and the situation? Pass out self-reflective exit slips Ask for questions
Suggested Literature/Websites	EPICS High School Web site- Purdue University https://engineering.purdue.edu/EPICSHS

Adapted from *Ready, Set, Create*- Cooper-Hewitt, Smithsonian National Design Museum