Problem/place-based learning: unit example in a Hopi community

Setting learning in problem- or place-based scenarios is a good strategy for making learning authentic and relevant. Further, by integrating and spanning multiple disciplines, problem- and place-based learning scenarios also are consistent with the Hopi cultural view of the world, and their experience within it, as connected and interdependent. This example draws on students' home community, engaging students to use their knowledge and skills to work on solving real problems their communities face.

In this example, a group of collaborating middle school teachers hold conversations with various community members to help them focus the unit. They want to gain an understanding of important current issues in the community. Based on these conversations, the teachers decide on the unit's problem statement and the question that will be posed to students. Students will work in groups to find a solution to the problem.

> The problem statement is: *Your neighbors would like to grow enough food to feed the entire community.*
>
> The related question is: *What plan can you come up with to get the community close to their goal?*

This scenario was inspired by one community member's comment that they currently only grow enough food to feed one or two families, but in the past they grew enough through dry farming for everyone. They'd like to do that again.

In this classroom, students are already used to working in collaborative groups. In their groups and with scaffolding as needed from their teachers, students first discuss what they would like to know to solve the problem in each of a number of areas. Then they formulate a set of questions. Each person in the group takes a question and leads the research to answer that question. This may entail new learning that students need to accomplish in order to answer the question.

For example, students need mathematics to determine how much food needs to be grown and how much land is required to grow it. To do this, they need to consider how many people are in the community and how much food people need to eat each day to be healthy. They also need to consider how much land is required to grow this amount, as well as how much land is available. Answering these questions could include fairly simple calculations at the elementary school level and more complex algebra and geometry at the secondary level.

Mathematics also could be involved in other types of questions that are important to solving the scenario problem. For example, What kinds of food do people like to eat? How much experience do community members have with growing this food? And what are traditional farming methods that can be used? Asking and answering these questions could involve doing a survey to gather data and using statistics and graphing to analyze results.

For social studies, students also collect stories from community members, local expert farmers and elders to better understand their community's traditions around food. Students ask: Are these traditions on-going? If not, what happened? What's the status today?

For Language Arts, students also collect a variety of different types of stories about food production in their community, including, for example, about planting, harvesting, and the natural environment. They consider the role of the oral tradition in their community. Students work together to discover what makes a traditional story they hear effective in carrying its message. Is it funny, scary, or sad? Then they develop their own stories about plants, food and farming based on those they've heard and their understanding of what makes a traditional story powerful.

For science, students study the types of conditions various plants need to grow, asking, What is the needed microbial condition of the soil? What amounts of water and sun are needed for optimal plant health? What are the benefits of traditional Hopi farming methods in our dry climate? What are the mechanisms at work in plants producing their various components? Depending on the age of students, the types of questions students would be answering would change.

As students work on different phases of the project, they post their work on a shared project wall in the classroom for others to learn from. For example, the questions they generate, the methods they decide on, initial findings, etc. Students also ask questions and provide feedback to one another in person and in the form of post-its on the project wall. With this public knowledge, student groups can learn from and support one another as the work progresses. This creates shared classroom knowledge and supports equity in the classroom.

To culminate the project, students present their group's plan in a multimedia presentation. Students present their projects in a format of their choice to classmates, parents, and invited community members. This gives students further opportunities to strengthen their presentation skills and provides the community with an opportunity to celebrate students' work. To end the unit, students write up their individual learning journeys highlighting new learning and important takeaways about the project.