Design a Project
(Allow 20 minutes to prepare.)

Discuss the following dimensions of the project, noting descriptive phrases on newsprint.

- **Product** What will you have when the project is finished?
- **Steps** What must be done? In what order? By what time?
- **Criteria** What makes a good product?
- **Learning objectives** What will the intern get out of it?
- **Resources** What human and other resources are available?

- Discuss how the mentor interacts with the youth on the project.
- Set out the purposes and boundaries of the project, and explain what a good product is.
- Get the youth started with essential information and advice.
- Engage the youth in problem solving as problems arise.
- Assess the product and the steps that led up to it with the youth.

Visit Project Stations and Vote
(Allow 10 minutes to visit project stations: read project descriptions displayed on newsprint, ask participants for more information, and use stickers to vote.)

- The project I would like to do the most!

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Beach Environment Exhibit

Description of a Project
In some professions, such as engineering, most work is organized in projects. In other fields, projects may be less common, but most people have projects to do some of the time.

Projects give interns a chance to plan, carry out, and assess a set of activities that makes use of skills and knowledge they have acquired at work and in school. Ideally they learn not only how to do the project itself but how to handle other projects in the future: planning, gathering information, following through, problem solving, and teamwork.

Mentors have told us that one of the most important challenges they face is having too little time to spend with their interns. Although projects still require mentoring, they engage the intern in productive learning activities without constant supervision.

Project Features
- Nonroutine; different from the regular work that people do every day.
- Has a beginning, middle, and end; doesn’t continue indefinitely.
- Includes a sequence of steps, often involving gathering information and interacting with different people.
- Has a product.
Situation
(Read aloud.)

A mentor who is a designer and engineer at a zoo describes how he involved his intern in planning a beach environment exhibit.

1 We had to create a beach environment. We had a space in the exhibit that was 12 feet this way and 14 feet that way and went from so many inches deep at one end to zero at the other end as it ramped up the beach. “How much water is in there? How did you figure that out?” You’ve got to use approximations, you’ve got to use triangulations, trigonometry, geometry, you know, straight measuring skills, scaling skills. “How much water is in there when we lower the water level 6 inches when the tide goes out? Now draw that up in a picture, label all of the parts, and put the dimensions in.”

2 “The tide’s going to get down in five minutes, so that this exhibit doesn’t take half a day for you to see the tide go down. How many gallons of water do you have to pump? How fast does the pump have to work to pump that water?” This is gallons per minute, and we have all those cute conversions with 60s involved in it. So that kid sat down and figured all of that stuff out and totally tickled the hell out of himself when he realized he knows how to do this. “This is what geometry is all about. I always wondered about that.”

The mentor describes how he delegated particular tasks to his intern.

3 “All right, go learn everything there is to learn about box turtles. What do they eat? How much do they weigh? How long do they live? Where do they live? How warm does it have to be? Because you’ve got to make the exhibit box that they live in the right temperature.” You know, here’s science and math and teaching and testing and all of this put together. “Let’s go on to the next animal. There’s only going to be 40 animals in this exhibit. You’ve got 39 to go!”

4 The other rule of education is to learn how to find out. I had never built one of these before and the kid knew that up front. We’re both flying blind here. “How are we going to find out? Let’s run some experiments.” And so we had ponds around the zoo with flamingos and stuff like that. We’d go out with a board and push water around and fiddle around and use the stopwatch and say, “Oh, that worked. The flamingos didn’t like it, but it worked.” Part of the clue of how this works is that I’ve got my bag of tricks. I know some general things about physics and science, but I don’t know exactly because no one’s ever built one just like this before. You can’t go get it out of a book somewhere. So we stumbled around together and I let us make mistakes. And we fixed the mistakes and then tried again. And that didn’t work either or it did work. “Let’s go to plan C.” So the kid learned that doing math and science is being flexible, not to be committed to design A just because it’s the first one you thought of. It might be the best one, but not necessarily.

What Do You Think?
(Discuss for 5 minutes.)

◆ What do you think the intern would learn from this project for the exhibit?
◆ What did the mentor do to try to guarantee the intern’s success?

Brainstorm Projects
(Allow 5 minutes.)

◆ What kinds of projects could youth do in your workplace?
◆ Choose a project from the brainstorm list that you would like to develop further with a group.