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ABSTRACT

This short, narrative pamphlet on the roles of engineers in environmental quality control accompanies the appropriate grade leve' curriculum guide. (BP)

Jobs of Engineers in Environmental Quality Control

L 5
Grade 7

Author

Corky Kirkpatrick

Produced By

Project COULD
(Coos County Intermediate Education District)

PROJECT COULD

CAREER ORIENTATION UTILIZING LANGUAGE DEVELOPMENT

A PACE PROJECT

Elementary and Secondary Education Act of 1965

Project COULD was developed as a means of building skills, knowledges, and attitudes upon elementary children's previously acquired backgrounds. language heard most frequently at home and in the immediate environment.

A series of units of instruction were developed from the concepts and vocabulary of the industries indigenous to Coos County. The intention was to promote vocational awareness, exploration and language development for the students in grades 3 through 8.

Materials prepared by Project COULD are available from the IMC of Coos County Intermediate Education District, 2405 Colorado Street, North Bend, Oregon, 97459.

Bob and Jack were sorting through the lures in their tackle boxes. Both had purchased new equipment for their first big fishing trip of the year. They were spending the night out in Jack's back yard so they could get an early start. Jack's dad liked to fish, so he was taking them to a good spot about 20 miles up the river.

The two boys did lots of things together. They had been friends since Cub Scout days and learned the basics about outdoor camping and backpacking from Scout experiences.

And, amazingly enough, the two boys often thought alike. Take the lures for the fishing trip. Although they had shopped separately and didn't discuss purchases beforehand, they came home with almost identical gear.

The boys had started to think about careers. Both agreed they wanted to do something directly related to the environment and maintaining controls.

When they got settled in the back yard with a couple of cokes and a big bowl of popcorn, Bob said, "I had another conference with Mr. Atkins today. He did a neat job of finding information about the paper industry for me."

Jack knew that Bob had asked the school counselor to help him find out job requirements for research and quality control in the paper industry. He was waiting to see if it was helpful before he paid the counselor a visit himself.

"What kinds of information did you find out?" Jack asked.

"Well, it was sort of hard for Mr. Atkins, but he finally talked to someone at the mill. They told him what kinds of jobs there are and types of courses needed.

I haven't decided for sure, but I might take training to become a technical superintendent. It would be good to know that I had control in testing a company's ability to have correct water quality."

"I want to work outdoors," Jack said. "Maybe if I work for a lumber company I can do something about stopping those horrid clearcutting areas."

"I read an article in the newspaper not too long ago explaining that clearcutting isn't all that bad," Bob said. "It explained that old trees are not as useful as the young ones and that nature would eventually destroy a spot through forest fire much the same as the forester. But the forester would clear the area and replant with small trees that produced far more oxygen and made more wood available."

Jack interrupted, "I heard about an interesting new program to meet demands for more timber products and still maintain a high quality forest environment. It's called FALCON, for Forest, Advanced Logging, and CONservation. I understand they are going to try to develop methods for serial logging such as balloons, helicopter, and skyline cable systems."

"It's interesting the way the philosophy of the nation has changed from preservation to conservation," Bob said. "Earlier stages of preservation are being changed so that in the future there will be more and more management of the environment."

"I heard a speaker say once that conservation is simply applied ecology. That conservation with an ecological emphasis is a way of happily relating man to his natural resources," Jack added.

The next morning as the boys were headed up to the fishing spot they passed a bunch of loggers. From the

road it looked like they were measuring the trees. They had chains and were looking through funny instruments.

"What do you suppose they are doing?" Jack asked his father.

"I really don't know much about lumbering," Jack's father replied. "But it looks like an engineering survey team."

"If you really want to know you should go talk to Mr. Atkins. I bet he could tell you what they do," Bob interjected.

"That's a good idea," Jack said.

On Monday when the boys returned to school Jack did make an appointment with Mr. Atkins. He was curious about the lumbering industry, especially if he could do anything with environmental controls.

Jack explained to Mr. Atkins he wanted some career information. "Bob told me how helpful you were in finding information about paper mills and jobs in environmental quality control," Jack said. "I am interested in environmental control, too, but I want to work outdoors."

"Do you want to be a logger?" Mr. Atkins asked.

"No, I want to protect the environment some way," Jack replied. "Could I be an engineer and do that?"

"I think so," Mr. Atkins said. "But we would have to do some research to find out for sure. Here's the same book Bob used. I remember he read a section on forestry. Here's a paragraph about a survey assistant."

The two read what a man would do as a survey assistant and learned he would locate and mark boundary lines, locate missing corners, establish level lines, locate positions for dams and impoundments, prepare maps for survey, work on land appraisal and acquisition problems for his employer.

"I think I can probably find more specific material about particular jobs," Mr. Atkins told Jack. "Come back next week and see what I have found."

When Jack returned for another visit with the counselor, Mr. Atkins said, "Well, I was lucky. I found a career guide with some information about jobs in engineering in the forestry industry. They include axeman, head chainman, instrument man, party chief, rear chainman, and the two members of the road survey team. In designing roads they have environmental quality controls. You may take this home and read through it to see if you are interested."

Luckily Jack had a free period later that morning so he could look over the information. It started with an explanation about foresters. He learned there was even a course in forestry technology to prepare the worker. The forester decides what trees are to be cut, oversees reforestation, and supervises the growth of new trees. He sometimes orders spraying to kill weeds or fertilize the new growth.

But more interesting to Jack were the descriptions about engineering work. Some of these didn't require college, like the axeman. He was the one who cut a path through the underbrush for the chaining.

The two chainmen make sure the chain is taut to get accurate readings. The rear chainman holds the end near the instrument operator while the head chainman takes the chain out to the place where the measurement will be made. The head chainman has more experience. He gives the sights and makes sure the chain is clear of obstacles.

The instrument man is sometimes called the transit operator because he operates the transit to measure

vertical and horizontal angles. He does field computation using trigonometry. When it is time to move, he resets the tripod making sure that the plumb bob, magnifying telescope, and instrument protractors are set accurately.

Jack learned the highest level a man could reach in the engineering area with just a high school education would be party chief. He gives directions to the men before they begin work, sets the pace for the entire group, and sometimes helps with the field computations to determine where the roads should go to get the logs out of the forest.

Usually the foresters tell the engineers where they would like the roads to reach the most timber.

A road survey team actually marks the path the road will follow when the transit team has finished. The levelman sights through a level to a point on a road and records the elevation. Usually he starts from a spot of known elevation. A man at the other end pounds a hub into the ground and places a tack in the top to mark positions. He holds the level rod. He is called the rodman.

Jack found all this very interesting, but he really wanted to know more about FALCON as well. He asked Mr. Atkins about the new program. By writing to the U. S. Forest Service they were able to find out it is a five year, federally-financed program to discover new ways to get lumber out of the forests.

"I'll be out of high school by then," Jack said. "But maybe there will be completely different ways I can work toward saving our environment then."