

Problem Based Learning Is Effective Teaching Style



Dr. Larry Cogburn, standing left, and a problem-based learning team take an electrocardiogram of a calf as part of a problem-based learning laboratory in a comparative physiology course. The students, clockwise from left, are LeAnne Highsmith, Robert Rohrer, Gregory Greene, Kim Gagliardi, Cheryl Gaskill and Christina Roller.

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 NEWARK, Del. — When you get a group of students working together on a practical problem, some amazing learning can take place. That's what two professors at the University of Delaware have discovered. Dr. Calvin Keeler and Dr. Larry Cogburn, both in the department of animal science and agricultural biochemistry, took a course from the university's Center for Teaching Effectiveness on problem-based learning. They then applied the methods to their classes.

"Problem-based learning was developed at medical and veterinary schools," Keeler says. "The idea is that if students are given a practical problem and have to figure it out themselves, they are much more apt to retain what they learn."

Keeler is using problem-based learning in his course on principles of molecular genetics, designed for seniors and first-year graduate students. He acknowledges that it's more work for the teacher.

"You can't just grind out facts," he says. "The structure of DNA is not easy for students to learn. So I had to think about giving them a problem that makes them figure out the structure of DNA—for example, how a mutagen affects DNA. By figuring out what happens to the DNA, they have also figured out the DNA structure."

Cogburn uses a problem-based approach in the laboratory section of his undergraduate comparative physiology course. Each week, the students are given a practical problem with a domestic animal. For example, one laboratory

requires students to take and compare electrocardiograms of several types of animals.

The class is divided into six-person teams in which each individual plays a distinct role: leader, recorder, lab reporter, accuracy coach, encourager and researcher. These roles are rotated with each project.

"The problem-based labs make students work together," Cogburn notes. "Everyone has different skills. And all can contribute and achieve. In a sense, the students are motivated to work by peer pressure. They try to excel."

"They learn effective communication skills, interpersonal relations and how to work as a team," he adds.

Cogburn says the work is both practical and applied. As students discuss the problems, just as they would in a private laboratory or practice, they learn that no one can perform all the tasks and everybody has something different to offer.

"I find that the students are more motivated; they learn to work in a group and appreciate the different skills of others," Cogburn says. "And they learn responsibility."

Cogburn just completed his third year using the problem based learning method. It has proven to be effective for his purposes. Keeler, having completed one semester of problem-based learning, says he'll do it again.

"Problem-based learning is more work, and it's tough for the students too," Keeler says. "It can be intimidating. Students can't just sit there and listen—they have to participate. But it's worth it if they learn and retain more."

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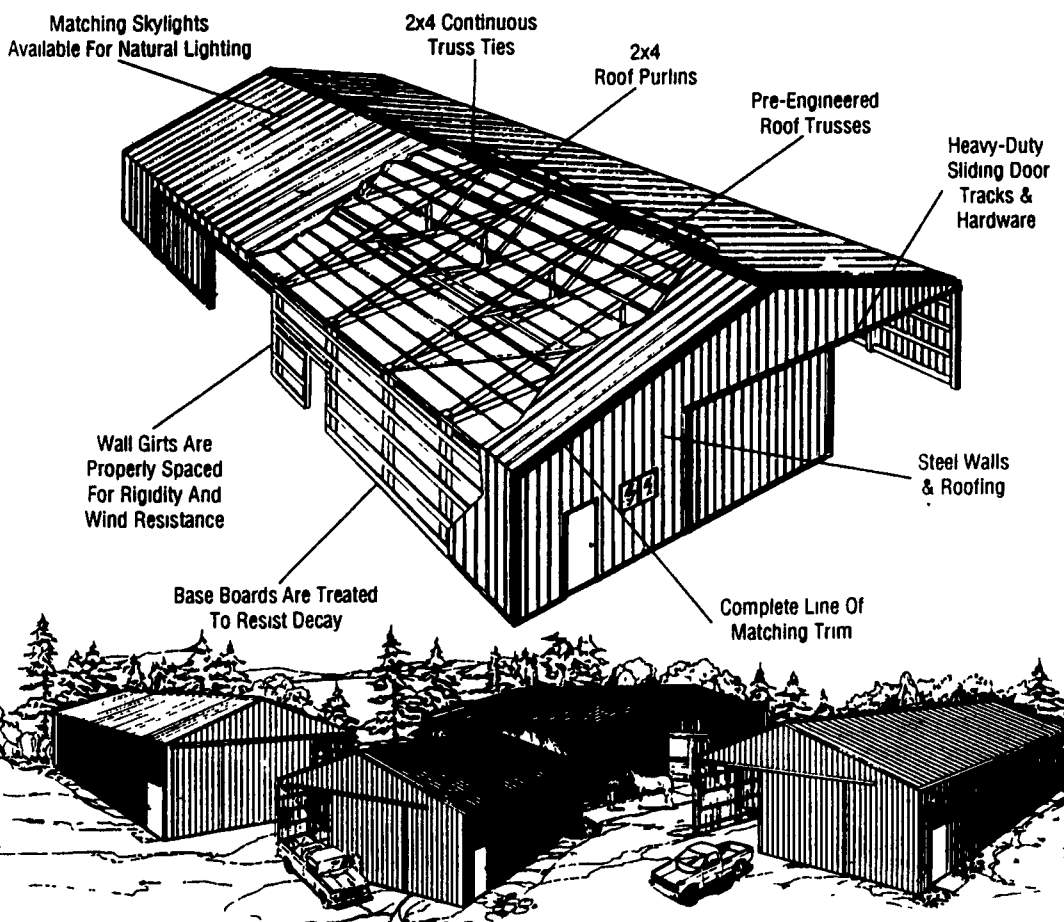
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