

PROFESSIONALLY SPEAKING

Credentials for the job

Look at the capstone design report to get a reading on an untried engineer.

by Ronald A.L. Rorrer

My boss at a company once asked me how it was that every Ph.D. interviewed could be rated in the top 10 percent by a dissertation advisor. Obviously, they are from the University of Lake Woebegone, where all the students are above average.

How does one decide among candidates? Often, hiring becomes a leap of faith, and you hope that you have somehow perceived that this candidate will at least show up to work (occasionally, on time), not just stare at the clock for eight hours, and certainly not go on a killing spree after the first annual review.

Let's start with the first thing that companies say they want from graduating seniors. Typically, it is playing well with others, or teamwork. The other individual traits that lead to success as an engineer in the corporate world, in order of importance, are oral communication, written communication, and technical ability.

When you look to hire an entry-level engineer graduating with a bachelor's degree for a technical position, you need look no farther than the senior design report.

The senior design project is also known as the capstone design sequence. In a wall, the capstone is the top course, which ties the other stones together. The capstone design sequence is intended to tie together the undergraduate experience. Because the course sequence is similar to an industrial project, it can be an indicator of performance in industry.

Ask the candidate to bring along either the final report for the year or the reports from each semester. If the candidate cannot find the report or seems hesitant to bring it, do you need to know any more? It was not a good job. Or, the candidate is completely disorganized, or was not instrumental in the project and never had a copy.

If you are going to be the manager of this employee, you meet the candidate early in the morning, send him or her on to the other interviewers, and look at the report.

First, you flip through it. With rare exceptions, if it looks good, it is good. This is the most important 10 minutes that you can spend evaluating a candidate.

Students have the opportunity today to work on fabulous projects. Virtually every engineering society has a project suitable for senior design. If these projects or others like them do not excite students, they are not going to be real mechanical engineers. If they didn't work on the ASME

human-powered vehicle, SAE Mini-Baja, or Formula SAE, they should have worked on something requiring similar engineering interest and effort.

You read the abstract, look at the assembly drawing of the project, and then read the conclusion and recommendations. Perhaps you read sections of the report.

This tells you whether or not the candidate's team produced a good piece of work. Your task at the end of the day will be to determine the contribution made by the individual you are interviewing.

Your questions can be directly in reference to the report. For example, ask: "What was your role on the team?" Or, "What part did you have in writing the report?" This one is important. It is possible not to be involved in the writing. Some students will only do CAD drawings, others machining, etc.

What is different about this from the normal interviewing process? It is evaluation of the written communication. A much deeper understanding of a technical topic is demonstrated when one can write about it. It's not just that it is difficult to write, but to write takes more understanding of a subject than is required to talk about it.

When discussing projects with students, I will feel that they understand the technical aspects of the work. However, when I read the design reports, I invariably find that students understand less than I thought they did.

If you want to really see how a new mechanical engineering graduate works in a team and how one will communicate technical information, the yearlong internship has already been accomplished for you. All you need to do is tap the treasure chest of the senior design report.

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