

PREFACE

(Excerpted from First Edition of *Studying Engineering*)

[Note: I am taking the liberty of reprinting part of the preface from the first edition of this book. I'm not sure whether people read prefaces, but I do hope you'll read this one. It does about as good a job as I could do to explain the philosophy that underlies this book. - R.B.Landis]

We aren't born knowing how to be effective. We learn how. We learn from our parents or guardians, from our teachers, from our peers, and from supervisors and mentors. We learn from workshops and seminars, from books, and from trial and error. Developing our effectiveness is a life-long process. Sometimes we get more help than other times. For example, when we join an organization as a professional, we generally receive lots of help. The organization benefits if we are successful, and so it takes steps to ensure that we are.

Industry executives are well aware that new engineering graduates have a long way to go before they can "earn their salary." New engineering hires are thus provided with formal training, on-the-job training, close supervision, progressively more challenging assignments, rotating work assignments, and time to mature.

Strangely, when new students (or, in fact, new faculty) come to the university, they are left primarily on their own to figure out how to be successful. Academic organizations seem more interested in evaluating their newest members than in doing things to ensure that they succeed.

Within engineering education, this "sink or swim" approach is not working. Only about 40 percent of students who start engineering study ever graduate. Most drop out, flunk out, or change their majors. And many of those who do graduate fail to work up to their full potential.

Even deans of engineering need training. As a new dean, I had four separate consultants in for two days each to teach me (and my school's faculty) how to be effective in preparing for our upcoming accreditation process. In addition, I have participated in formal training in personnel management, fund raising, Total Quality Management, computer technology, and teaching methods.

If new engineering graduates and new engineering deans need orientation, training, mentoring, and time to mature to be effective, how is it that as engineering educators we expect our students to know how to go about the task of engineering study the day they arrive?

Sometimes it appears that we don't want our students to succeed. We seem to go out of our way to avoid helping our students learn to be effective. Our view of subjects like professional development, academic success strategies, personal development, and orientation is that they are not "academic." We are reluctant to find room for them in our already full curricula.

But it even goes farther than that. We sometimes seem pleased by the fact that many of our students don't succeed. We find satisfaction in the view that "not everyone can be an engineer." Our approach is to put up a difficult challenge and believe that we have done a service to the profession by "weeding out" those who don't measure up. We tend to hold the black-and-white view that "some have it, and some don't."

If it were true that some students have it and some don't, then it probably wouldn't make sense to devote time and effort to helping students develop the skills they need to succeed. It wouldn't make a difference anyway. But this is one heck of a view for educators to have.

The good news, however, is that engineering education in the United States appears to be undergoing a revolution. We are in the process of a shift from the "sink or swim" paradigm to one of "student development." Engineering colleges across the nation are revising their freshman-year curricula with the primary goal of enhancing student success.

Although much of this curricular change involves moving more engineering content in areas such as design, graphics, computing, problem solving, and creativity into the freshman year, I hope that many engineering programs will find room for the "student development" content of this book in their freshman-year curriculum.

The basic premise of this book is that a small amount of time spent working with students on how to be effective early on can have an enormous payoff through the remainder of their college experience.

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