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Learning the fundamentals

Surveys are telling part of the story of the engineering profession in this issue and what we are seeing are gaps in education now, and some that may be lurking in the future.

A report out of the University of Windsor and presented at the Engineering and Technology Forum in November (News, page 12) indicated that schools are graduating students without sufficient emphasis on the full range of skills needed for today's engineering work place. While respondents said that sufficient emphasis is placed on technical skills, the concern is that the breadth of knowledge is narrowing. The information came from a survey, *Complementary Skills Needed for Engineers in Canadian Industry*, which polled engineering schools and industry.

Industry respondents (with a response rate of 98 per cent) emphasized that the three elements employees need to bring to the work place are: oral communication, professional attitude and professional ethics. Written communication and conflict management were identified as important skills for experienced

mechanical engineers in the same survey. While engineering and engineering technology schools are turning out students with fine technical skills, Peter Frise, P.Eng., who presented the survey results, said that employers also want employees to be punctual, reliable and polite, and to show up and do the job well.

Academe felt creative thinking, oral presentation, and teamwork were the most important skills.

The importance of non-technical skills is echoed in studies done or sponsored by the Canadian Council of Professional Engineers (CCPE). Karen Martinson reports on page 34 that for professional engineers to succeed in the workplace they must develop their complementary, such as administrative, skills. Both engineers and engineering technologists identified negotiation and business skills as the top two skills for advancement. Technologists also felt second or third language skills would improve their professional mobility, while engineers saw personal management skills as assets to acquire to maximize their success in their occupation. The survey of Canadian engineers and technologists, for which she provides an analysis, shows that engineers are generally happy with their work.

A second survey, *Canadian Engineers for Tomorrow, Trends in Engineering and Degrees Awarded*, indicates that with engineering enrolment and the number of engineering professors reaching retirement both increasing, renewed emphasis will have to be placed on finding the right people to give students the skills that are expected of an engineering professional.

Though our own Professional Profile Questionnaire does not focus on necessary skills, it does identify the top areas of job function. Project planning, administration and marketing and sales were among the most common job functions, emphasizing the need for well-rounded education and training in a business milieu.

Certainly, the surveys show a gap, and somewhere in their formation—whether as engineering students or as interns—professional engineers will need to learn complementary or “soft” skills as much as they need to learn the values of the profession and professionalism. Perhaps more seminars like the Engineering and Technology Forum (and one at Concordia University in Montreal this past fall) bringing together academe, industry, government and professional associations will reinforce to all, and especially to students, the values and skills that are required of every professional engineer.

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