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CRITICAL NON-TECHNICAL SKILLS: What Are They and How Do You Get Them ?

Beginning in the mid-1980s, dramatic change occurred in the workplace that affects the manner in which we work and the way in which we manage our careers. In short, many of the old rules no longer apply.

In today's competitive job market, technical competence alone is not sufficient for career success. Employers are not just looking for a mastery of chemistry but increasingly are demanding that new hires have a number of non-technical skills that will help them perform effectively in the workplace.

While some chemical professionals already may be proficient in some of these skills – ranging from writing and speaking abilities to product stewardship and teamwork – most could benefit from improvement in these skills, especially those associated with communication.

Traditionally, a chemical professional's primary work functions required proficiency in skills associated with analyzing and interpreting data generated in the laboratory. While these skill sets remain important in today's market, changes in the way chemists perform some aspects of their jobs have been altered and now demand a high level of competence in a number of non-technical skill areas.

"It's the art of getting along with people. Persuading and influencing are very important," said Dorothy Rodmann, a human resources consultant who co-presented a paper with Robert Rich, Ph.D. at ACS' national meeting in spring 2001. "Also, chemical professionals need to know the techniques of mediation so that they can develop good compromises that result in win-win situations. All those communication skills are vitally important and more so than ever before."

These skills are increasingly important in today's job market and can make the difference between career success and failure. Although some scientists can have successful careers without having them, they probably won't function effectively in today's workplace, Rodmann said.

"It's hard to rise above being an average worker if you don't have a strong competence in these areas," she said. "But, I don't think you necessarily will be a total failure if you don't have them."

A recent survey of employers by the ACS Department of Career Services, identified those non-technical skills most valued by employers. The list of desirable skills and traits includes: mastery of chemistry; breadth of knowledge of science; problem-solving ability; flexibility and versatility, computer literacy and practical experience.

Other important attributes are: initiative and follow-through, communication skills, interpersonal skills, leadership skills and business orientation and other non-technical skills. For further information see ACS Current Trends in Chemical Technology, Business and Employment, 1998 (www.acs.org/careers/empres/pubs01.html).

This article will highlight these important skills and provide a comprehensive list of resources for developing them.

Top six critical non-technical skills

The above list of desirable skills can be grouped into six broad categories: written communications, oral communications and presentations, computer and information technology, team interaction and management, effective presentations, product stewardship and Responsible Care principles, and, lastly, initiative, vision and maturity

Written Communications

"If you're going to be a scientist you need to be able to communicate your results. The whole point of science is to share information with other people," Rich asserted.

In industry, regardless of the job, chemical professionals need to be able to communicate their findings, such as better ways to manufacture an industrial chemical. If it's the pharmaceutical industry, they may be called upon to write a paper explaining to a larger audience how to go about improving a drug. In academe, many chemistry faculty members are expected to publish regularly not only to achieve tenure but also for recognition and greater monetary rewards.

"Communication skills allow you to be a part of a bigger enterprise," Rich said. "Ultimately, your work won't be a success if you can't communicate the results to other audiences. If it's difficult for other people to understand what you are doing — say, at the managerial level — then your work may not be accepted."

Take an inventory of your own skills: Can you write a scientific article, review or textbook? Or write an effective proposal? How about drafting a clear, concise memorandum or brief?

Other written skills employers are seeking include an ability to write clear, concise letters or reports and a talent for proofreading and editing effectively.

Resources to Improve Written Communications

If you think you need help in bolstering your written communication skills, a variety of options are open to you: ask your colleagues to review and edit your writing; seek tutoring at writing centers; and read well-written books and articles

Other options include attending an editing and grammar class or sitting in on a proposal-writing workshop, such as those organized by ACS' Petroleum Research Fund at National and Regional ACS meetings (www.acs.org/Prf).

Oral Communications and Presentations

Chemical scientists typically use presentation skills in two main settings: for a formal speech or sharing of information before a large group or for smaller group presentations that are often directed at managers, peers or customers and are technical in nature. Each setting requires a different set of communication skills.

As with written communication skills, the common ingredient needed to communicate in each of these s ettings is a keen ability "to learn what others are doing and for others to understand what you are doing," Rich said.

Technical presentations in industrial settings are typically given to scientists from a variety of fields who are not necessarily specialists in your subject area. Can you alter your presentation style accordingly?

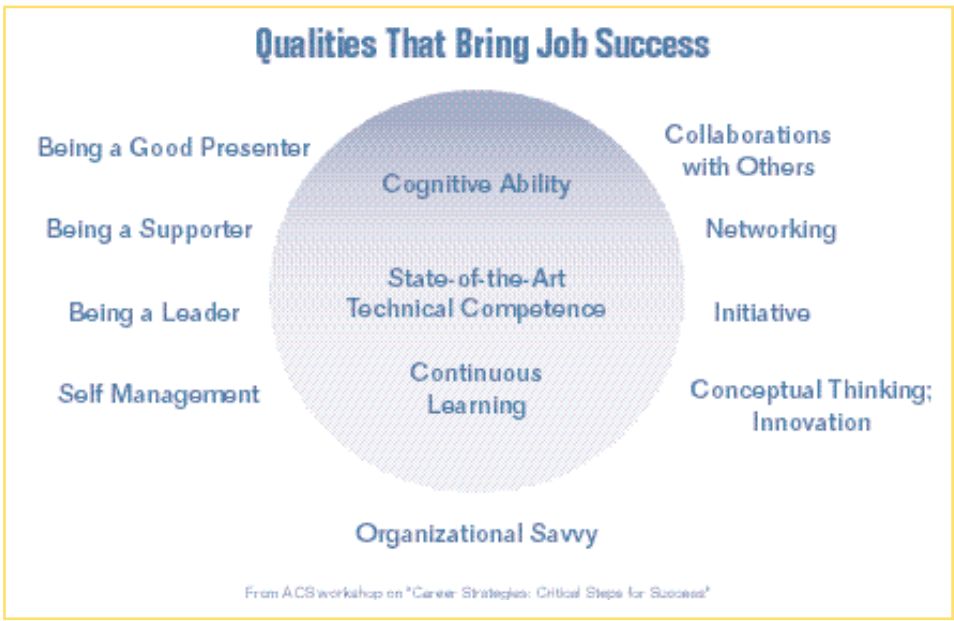
For instance, a synthetic organic chemist should be able to communicate with the modeler of large proteins to take advantage of opportunities in drug design, and vice versa. All scientists should be able to talk to individuals in other specialty areas to develop entirely new fields.

According to Rich and Rodmann, this category includes seven main features. Test yourself to check your strengths and weaknesses as a speaker.

Can you: Make presentations to groups, deliver information effectively and give speeches? Lead workshops and elicit discussion from participants? Chair public meetings or ceremonies?

For scientists to be successful they have to know how to run a meeting, Rich stressed. This includes writing an agenda; inviting the appropriate people to come; arranging the facility and adhering to the agenda. They also have to ensure that participants get from the meeting what they need, he said.

Other important speaking skills include remaining poised in public appearances and able to represent your organization to the public; building upon audience responses, moods or ideas and using techniques such as humor to warm up an



audience? Also, can you modify your talk extemporaneously to conform to questions and the specific interests of the audience?

Finally, can you identify the right message for the right audience and build political support for a particular initiative. Having political savvy involves good interpersonal ability and skill in working with difficult personalities, but it can be learned, Rodmann said.

Resources to Improve Oral Communications and Presentations

Looking for ways to improve your skills at oral communications and giving presentations? One of the most effective ways is to join Toastmasters, International (www.Toastmaster.org) and attend meetings regularly to enhance your presentation skills.

Another is to practice presentations with your colleagues. A good place to begin is your research group's technical meetings. You can also attend a presentation skills workshop or take a speech class at a university.

Oral communications skills take several forms, including interpersonal, mediation and negotiation and conflict resolution. Workshop offerings are available to improve these techniques, but you can also improve your skill by reading some books on listening and people skills that can be purchased inexpensively at a local bookstore. Because these skills are improved with practice, volunteering to speak regularly at an ACS national or regional meeting can be very helpful. This is a very effective means of seeing yourself as others see you.

Computer and Information Technology

In today's workplace, it is absolutely essential for scientists to be able to work efficiently at a desktop computer. The more they can do with a computer to support their productivity, the more successful they will be, Rich said.

Computers are powerful research tools used by scientists for both the acquisition and dissemination of knowledge and information. Scientists also use them for access to the Internet and to produce and access pages on the World Wide Web. Before going further in your career, you may want to check your own computer literacy. Can you:

- Figure out how to install and troubleshoot computer hardware and software?
- Use a PC comfortably?
- Work well with standard computer hardware and software?
- Access information quickly using the web?
- Design web pages?
- Access electronic help files and resources?

Resources available to bolster computer skills

A variety of resources are available to improve your computer and information technology skills. One would be to take a class at a local community college or university. Another is to sign up for a web-based IT class through distance education. A third would be to read technology magazines such as "Yahoo! Internet Life" (www.Yil.co,) and "eWeek" (formerly

PC Week) (www.zdnet.com/eweek/). Still another way of improving your computer literacy is to obtain and practice on software at home.

Teams

In general, a team consists of two or more individuals who collaborate on work activities to accomplish a common objective. The team brings together the skills, experiences and insights and perspectives of its participants.

Teams can be diverse in many ways — culture and heritage, job functions and viewpoints. The skills needed to become effective team members depend heavily upon a number of communication skills such as interpersonal, conflict resolution, listening and understanding others' views, presentation ability and, on occasion, facilitation, Rodmann said.

Teams are more important than ever before in the chemical workplace because they bring together different perspectives into an interdisciplinary environment. Today's interdisciplinary programs offer some of the finest opportunities for research.

Collaborative work efforts exist in every sector of the science workplace but in some sectors, such work efforts are better characterized as task forces or committees, Rodmann noted. In the industrial sector, the team concept prevails; in academe, committees are part of the work environment; and in government and other organizations (such as nonprofits) there are varying degrees of commitment to teams, but committees and task forces are integral to their work activities, she added.

"You can't be expected to know everything, you can't be expected to know all the various perspectives. What a team does is bring together all the disciplines so individuals can share knowledge," Rodmann said.

Team Interaction and Management

Being an effective team member requires a variety of inter-personal skills. Can you:

- Work well as a team member, motivating fellow team members and workers, sharing credit and expressing appreciation?
- See situations through others' eyes, deal effectively with many different people and appreciate others' ways of doing things?
- Link the work of the team to the mission of the organization?
- Manage and coordinate a team's effort and not necessarily seek to be the subject matter expert?
- Be effective at securing needed resources for the team?
- Understand and get along with people of other races, religions, and ethnic or cultural backgrounds?
- Listen, respect opinions offered, and when disagreeing provide suggestions?
- Work effectively with a wide range of personalities, including difficult individuals, to accomplish results for the team?

Resources to Improve Team Interaction and Management

Among the many ways to improve your team interaction and management skills is to volunteer for team projects at work, especially those that are connected with the critical work efforts of your organization.

Other ways to build your skills would be to attend a sensitivity or group dynamics workshop; investigate workshops on strengthening team skills on the Internet; join or lead a community political, social, religious or other group; or read books on teamwork.

Product Stewardship and Responsible Care

Many employers in the chemical manufacturing sector have adopted the American Chemistry Council's principles of Responsible Care®, www.cmaHQ.com. Companies that have adopted these principles are committed to continuous progress toward the mission of no accidents, injuries or harm to the environment. Responses from employers interviewed for the study, "Current Trends" indicate that employers value employees who understand Responsible Care® and are committed to incorporating the principles in their work.

In keeping with these considerations, chemical professionals should be aware of the Responsible Care® principles which include:

- To seek and incorporate public input regarding our products and operations.
- To provide chemicals that can be manufactured, transported, used and disposed of safely.
- To make health, safety, the environment and resource conservation critical considerations for all new and existing products and processes.
- To provide information on health or environmental risks and pursue protective measures for employees, the public and other key stakeholders.
- To work with customers, carriers, suppliers, distributors and contractors to foster the safe use, transport and disposal of chemicals.
- To operate our facilities in a manner that protects the environment and the health and safety of our employees and the public.
- To support education and research on the health, safety and environmental effects of our products and processes.
- To work with others to resolve problems associated with past handling and disposal practices.
- To lead in the development of responsible laws, regulations and standards that safeguard the community, workplace and environment.
- To practice Responsible Care® by encouraging and assisting others to adhere to these principles and practices.

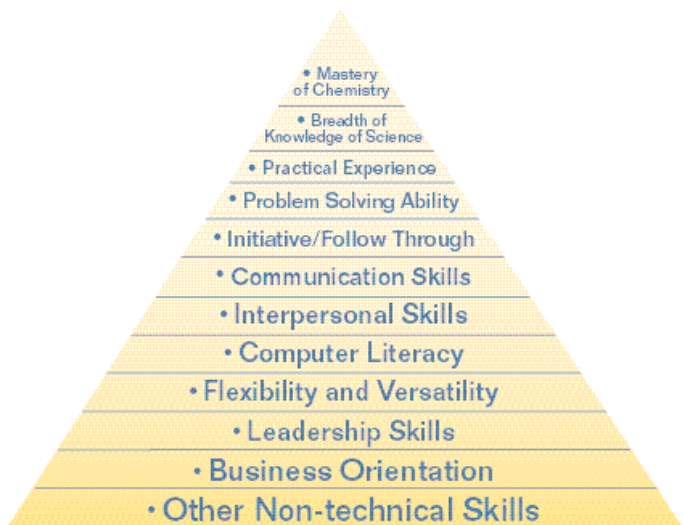
Initiative, vision and maturity

Some characteristics, such as initiative, are important to success in today's workplace and can't be learned in a formal way.

Initiative is not simply carrying out your known work responsibilities in a highly effective manner. It is work that you initiate that reaches beyond the borders of your known work accountabilities and the motivation is not to benefit yourself, but your organization, your division or department, or others, said Rodmann.

Initiative, vision and maturity embrace six important skills:

- Seizing opportunities to apply new ideas and turn them into something tangible of value to the organization



Desirable Skills/Traits for the Working Chemist

Source: ACS Current Trends in Chemical Technology, Business and Employment, 1997

- Demonstrating an ability to design, develop and implement new programs.
- Completing projects within time and budget constraints
- Finishing an unpleasant or difficult project
- Networking to gain needed information, reciprocate with data when requested and give credit for others' contributions
- Remaining flexible so as not to force others to adhere to your values and way of operating

Practicing initiative, vision and maturity

How can you polish these skills if you think you need to? Among the many ways you can are to commit yourself to working beyond the borders of your assigned responsibilities and strive to produce results. Another way would be to realize the importance of suggesting new ideas and carrying them out through the implementation stage.

Also, don't forget the value of collaboration and building support with "concerned others" when you must present your ideas to management for approval. And remember that initiative is often identified with the critical pathways of work in your organization.

Other ways to sharpen your skills in this area is to see projects or problems through the eyes of your customers, competitors, coworkers and managers. Listen and respect others' opinions and ideas and aim to evaluate and improve upon products and services. Finally, be sensitive to different communication and work styles. Assure others that they have important contributions to make.

Some General Developmental Initiatives for Skill-Building

Lastly, a number of other ways exist for chemical professionals to broaden their non-technical skills. These are:

- Reading
- Workshops, seminars
- Self-initiated changes in behavior
- University coursework
- Transfer to new job assignment
- Sabbatical
- Volunteer – community and professional associations
- Short-term assignments
- Temporary agency work

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Additional information

To obtain copies of this publication, "Nine Steps to Career Success," (www.acs.org/careers/empres/pubs01.html) or ACS Current Trends in Chemical Technology, Business and Employment, 1998, please call (1-800) 227-5558 or e-mail: careers@acs.org.

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