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## Template for 1.2 Qualitative Data Entry

### Instructions:

1. Record and transcribe interviews
2. Separate interviews by question (Make clear which answer in an interview corresponds to which question).
3. Paste the answer to each question into template below  
(For example, take all of your #1a responses and paste them by respondent into each row below)  
Space is given for 20 responses per question. #1 corresponds to respondent 1, #2 to respondent 2, etc.

### 1. Where is your industry going and how will changes in the industry shape the workforce?

#### a. Issues driving the industry?

- 1 Mainly, right now, it's the HMOs that are driving the industry; the changes made years ago with managed care; and, I understand new changes are coming. But we don't know... we don't know
- 2 Well you've got two questions there. It depends on whether my industry is recruiting or electronics. The key issue driving the recruiting industry is having access to the talent that's required
- 3 Growth in general. Obviously, as we get into the issues of our environment -and we are an environmental firm- that would be an example. Obviously, just having innovative ideas, I would imagine
- 4 Well, we are in an industry that really hasn't changed much; but we're a basic component of many diverse products and issues. So, the issues would be expanding markets, and new technologies
- 5 Currently it is conservation typically water conservation has been a big driving force and will be for a long time as our resources deplete.
- 6 Issues are costs -health care costs overall. And the ideas... I'm trying to think of the right way to phrase this: technology and understanding -knowledge- is greatly increasing; but the ability to apply it
- 7 The economic status... the housing market. If those continue to go down, so will our industry. That's the biggest thing I can think of. Without housing, the geotechnical companies can't flourish
- 8 Well, environmental issues drive us a lot. Mostly it would be encroachment on wildlife habitats -human encroachment- and how to replace wildlife habitats with vegetation. Well, one thing that
- 9 The industry, now, is moving towards being able to find better and safer drugs, and there needs to be more open and different innovative approaches, and, a lot of the time, there needs to be
- 10 The industry that I'm in is approximately 30 years old now; I would think that within the next 20 years, it will become more of an industry that deals with compliance issues and legal issues -;
- 11 Basic scientific knowledge drives the industry. But there's not enough technician skill to develop the knowledge. In other words, there's a few smart people who are discovering things; but, very few
- 12 We facilitate other non-profit (organizations) into reaching their goals. Reaching out to the entire basin, seeking opportunities to strengthen other non-profits by improving our quality of life, but
- 13 Robotics and new opportunities to reduce production costs
- 14 Balancing new development and the environment
- 15 Migration, more businesses moving this way
- 16 Economics and growth is what influences this industry
- 17 Environmental, solar energy, modern technology
- 18 Environment and government regulations - meet South Coast Air Quality Management District's emissions standards when operating power plant

#### b. Next frontier?

#### c. Next great breakthrough? (Question Combined in Survey)

- 1 I can't really think of any new technologies or breakthroughs; most of them have already been accomplished... at least as far as I know. Scientifically, it would be like curing cancer... but that's
- 2 I don't know.
- 3 Probably the expansion into more of an international kind of industry, in a sense. Like, we're becoming a world economy, so it's becoming about the world, not the country. So, I think that's
- 4 That would be tough. More automation. For production. I can't really think of anything.
- 5 Well if I knew that I would be doing it. not sure how to respond to that.
- 6 Improve non-invasive diagnostic tools. Again, machinery that would allow diagnosis without having to draw blood or invade a persons' space. That's pretty much it.



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- 7 I don't know.
- 8 Well, there could be quite a few; we're really varied. The way we're going now is publishing. The publishing practice has changed dramatically -and I just imagine that's going to continue. No
- 9 The breakthroughs will be finding new biologics -like a protein in DNA- that can be used to make new drugs with a higher safety profile. I think it's more integration of different research disciplines
- 10 I'm hoping that the cost of some of this technology will come down to where things like scanning electron microscopes and ground-penetrating radar, digital imaging... I'm hoping the cost of
- 11 I would say miniaturization of basic scientific bench work. There has been some of this -but it needs to continue. Detection of chemicals (is an example). That's the major issue.
- 12 I guess it would have to be, for me computers. Learning to do websites and web blogs and all that. No (further detail).
- 13 Reducing power usage
- 14 Global warming and balancing cost versus regulations. Better centralization of data.
- 15 In this area, hospitality will continue to be the top industry.
- 16 County/city have been very strict. It's hard every year to complete projects - too many procedures.
- 17 Strong outlook in environmental engineering concepts and policies.
- 18 Use best technology available to control air pollution that results from operating gas turbine generator.

**d. How will the future of the industry impact the skills needed in the workplace?**

- 1 Boy, I can't think of anything as far as next generation. I think that pretty much follows suit with this generation.
- 2 I don't know.
- 3 Oh this is going to sound one-sided: I think there is a difference between older and younger workers. While some of the workers have more technological knowledge, I think the nature of work
- 4 The next generation skills? If we go more automated, then we'll need more technicians to service the automation. New engineers -to improve the designs. Engineering skills. Math, scientific
- 5 Probably telemetry design and service of telemetry systems.
- 6 Next generation skills? Scientific and technology knowledge. Computer skills, of course. Media and communications skills. Regulatory knowledge. A very specific skill is shipping and international
- 7 I don't know.
- 8 Well, I think a lot of those are going to stay the same: computer, analytical, and statistical skills. Plus, you just can't beat -if you're a biologist- having a good solid background where you know
- 9 We need people who have better sense of the overall trends in the industry, and who have multi-disciplinary expertise -for example, people who know how to do manufacturing and also have
- 10 I still think that competency in written communication is going to be number one, and then a general knowledge of environmental law -we'll leave it at that. And that really is sad.
- 11 Basic scientific skills for entry level workers. Let's leave it at that.
- 12 I guess maturity. We get a lot of kids in here that take it for granted, show up late, and don't take it seriously. The willingness to learn. That's it.
- 13 Understanding Composite Materials and a good work ethic - Literacy is vital
- 14 Strong analytical skills will be needed. Most of our employees have a 4 year degree and this will be a requirement in the future. The support staff might be non-college graduates but will be
- 15 We will need more highly trained workers. More 2 year and 4 year college graduates will be needed to keep up with technology.
- 16 At the entry-level: math, writing, comprehension and computer. For management: leadership skills, strong work ethic. High school should include drafting and basic engineering skills.
- 17 Better products with high quality.
- 18 Problem-solving skills very important, understanding new technology and equipment.

**2. What combination of education, skills, and experience will be the most valuable in this industry at each level?**

**Where would you rank the need for management expertise, science expertise, interdisciplinary expertise, etc.?**

**a. Managerial level (list skills, education and experience needed)**

- 1 I would say at least a minimum of 8-10 years experience, and either an associates or a BA. I have a management position without a degree... but I have 20 years experience. So I'd recommend
- 2 Well, I do recruiting for Silicon for high tech engineers, managers, and executives. I also do environment work -lead and asbestos assessment. At the managerial level, for Silicon Valley, add
- 3 AICP -which is the licensing. Obviously you need a 4 year college degree. It varies. It's like a huge laundry list. Planning. Usually the AICP is the credentials for the folks that are doing city planning

- 4 College. At least an AA. At least 2 years experience. And the skills would depend on what position it is. For the entire company, we have 6 different (managerial) departments/positions.
- 5 5 year experience college degree as well as assembly manufacturing experience, electronic experience.
- 6 College degree. At least a Bachelor of Science. Managerial -5-7 years of work experience. That's pretty much it.
- 7 All of our employees went to 4 year universities, plus they all have degrees in engineering or geology. Well, they're actually all managers themselves -because they're degreed professional:
- 8 We would need somebody with at least a Masters degree in biological sciences. We have the scientific end, but a lot of time, that requires labor. And so, we need managers for the laborers
- 9 Like a Master's degree. Well, a solid background in biology. And some basic business management experience -probably 3 to 4 years in the biotech industry. Well, being able to raise fundii
- 10 Well, they would have to have a college degrees, and at least 4-5 years full time experience in the business. A minimum Bachelor's -but we would prefer a Masters. But a Bachelor's will wo
- 11 Scientific principals and English writing skills. I need people who have gotten Bachelor's degrees in the sciences -whether it's chemistry, biology, or molecular biology. That's what's needed
- 12 I guess computer skills, some college courses, and that's about it. A people person. Communication, business, and accounting (courses).
- 13 Lots of experience in the industry and production control
- 14 Project management, scientists and career ladder mobilization from professional and technician levels.
- 15 4 year college degree with computer skills and 1 to 2 years of experience.
- 16 Experience in this field - must have leadership skills, excellent communication and an education in engineering.
- 17 Education - Bachelor's degree in engineering (Civil, Electrical or Mechanical) from a college or university. Experience - At least five years' experience in professional engineering work.
- 18 College graduate with experience - environmental experience

**b. Professional level**

- 1 Professional, I would say at least 2-5 years experience. Skills, I would say most Microsoft programs -Word, Excel, and Access. HS diploma or higher. That's all I can think of.
- 2 At the professional level, in engineering, the college degree in engineering is needed, and employers prefer a Masters degree. In the environmental field the standards are looser, and a HS
- 3 4 year college; specialized certificate. That would be the norm. AICP (for the specialized certificate). Obviously (the 4 year degree would be in) the specialties I listed: biology, archaeology,
- 4 At the professional level? In our business that would be engineers; they would need at least 4 years experience; they don't necessarily need to have a degree, but some college would be g
- 5 I would classify that under office support staff people and I would say they need some level of vocational training with computer skills and customer service training. As well as at least 3 ye
- 6 Professional level would be again (a) college degree -Bachelor's degree-. 0 years experience -they're hiring right out of college -or 4-5 years experience without a degree.
- 7 The same thing that I just said: they need to be CEG certified; they all have stamps to sign off on... reports. That's pretty much it. (CEG stands for) Certified Engineering Geologist.
- 8 We would want someone who has writing skills -and knowledge of statistics, as well as training in the biological sciences. And computer skills. If they can't get the stuff onto the computer, th
- 9 Professional? Well, we all need to have on laboratory hands on skills; ability to read scientific literature; ability to conduct experiments. And analytical skills. That's it.
- 10 At the professional level, the minimum would be a 4 year degree, and a minimum of what is known as field school. If you're in the anthropological or archeology, you do this stuff called field
- 11 I would say that, at the professional level, this industry needs more people with advance degrees in the sciences -who know English. In the industry, there's not enough people in the scienc
- 12 I would say the same thing. No (other thing).
- 13 People that can use PCs and manage production control
- 14 Biologist, traffic engineer, cultural resource specialist, general science, land us professionals, GIS specialists.
- 15 At least a 2 year college degree with computer skills.
- 16 Must have a college degree - Bachelor's of Science degree in engineering or geology. Would like to see hands on experience at universities.
- 17 Education - Bachelor's degree in engineering from a college or university. Experience - At least one year of professional engineering.
- 18 Not applicable.

**c. Technician level**

- 1 Technician level, I would say at least vocational for education. Experience would also be 2-5 years experience. Skills -since we work in a doctors office- would include knowledge of basic m
- 2 I don't know.

- 3 Pretty much all that I just list prior. I think I covered as much as I could; that's pretty much it.
- 4 2 years experience. A HS or above education. Mechanically-inclined. Probably creative-thinking. That would be it.
- 5 I would say probably 1 year experience and at least a high school diploma or G.E.D. bilingual in Spanish a plus.
- 6 Associates degree or Bachelor's degree in the life sciences -no experience. HS or Associate degree with 2-3 years experience. That's basically it.
- 7 We don't have any technicians.
- 8 Well, I have some office techs. Computer skills, and, I guess, that sort of implies typing, doesn't it? And maybe some laboratory skills. We frequently have used people with quite a large rar
- 9 College. 4 year. Needs to be a biology major -having taken laboratory courses. And has experience working in a laboratory. That's about it.
- 10 The same as I just recited. No (difference) -because I regard professional and technician as the same -unless you guys interpret it differently. That's how I interpret it.
- 11 Again, Bachelor's degree -in the sciences. At the technician level, at the entry level, they need more exposure to laboratory techniques. The industry has a hard time -once they get skilled-
- 12 The same thing. No (other thing).
- 13 These are typically union jobs that typically requires basic HS degree and some basic math
- 14 Same as professional (see above) and Information Technology professional and accounting professional.
- 15 At least a 2 year college degree with computer skills.
- 16 Basic math, writing, communication and basic computers - must have excellent work ethic. No experience required.
- 17 Education - High school graduate and at least 30 semester units of engineering and mathematics from an accredited college or university. Experience - Six years' experience in general des
- 18 College graduate, military experience preferred. Computer tech training.

**d. Right now which of the following areas of expertise are needed most, the need for management expertise, science expertise and interdisciplinary expertise? Which is second?**

**Greatest Need**

- 1 Management Expertise
- 2 Science Expertise
- 3 Science Expertise
- 4 Science Expertise
- 5 Interdisciplinary Expertise
- 6 Science Expertise
- 7 Interdisciplinary Expertise
- 8 Interdisciplinary Expertise
- 9 Interdisciplinary Expertise
- 10 Interdisciplinary Expertise
- 11 Science Expertise
- 12 Management Expertise
- 13 Interdisciplinary Expertise
- 14 Interdisciplinary Expertise
- 15 Management Expertise
- 16 No idea
- 17 No answer
- 18 No answer

**Second Greatest Need**

- 1 Interdisciplinary Expertise
- 2 Interdisciplinary Expertise
- 3 Management Expertise
- 4 Management Expertise
- 5 Management Expertise
- 6 Interdisciplinary Expertise
- 7 Science Expertise
- 8 Science Expertise
- 9 Management Expertise
- 10 Science Expertise
- 11 Interdisciplinary Expertise
- 12 Interdisciplinary Expertise
- 13 Not sure.
- 14 Science Expertise
- 15 Science Expertise
- 16 No Idea
- 17 No answer
- 18 No answer

**3. Is there a critical skills shortage in the type of skills needed for 21st century innovative businesses – and if so,**



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**what skills are missing at each level? At which level is any gap most critical?**

**a. Managerial level (list skills, education and experience missing)**

- 1 Yes critical skills shortage Boy. Human resource knowledge. Knowledge of human resource duties. That's all I can really think of right now.
- 2 Yes critical skills shortage I don't know.
- 3 Yes critical skills shortage I would say just overall, like, human resource... that sort of thing. No (other thing), not at this point.
- 4 Yes critical skills shortage Experience. Previous managerial experience. Good communication skills. Dealing with people -people skills. That's probably it. A real challenge is -I don't know
- 5 No critical skills shortage
- 6 Yes critical skills shortage Let me think how to phrase this. Direct skills would be computer-savvy. And -for our industry- it would be regulatory knowledge. And the third one is human er
- 7 No critical skills shortage
- 8 Yes critical skills shortage Well, through the years, I would say that people skills have been the biggest problem. That's about all I can think of. Maybe organizational (skills) or being able
- 9 Yes critical skills shortage Ability to network with funding sources -we need to have more funding for research. Technical expertise plus business combined -some people only have one
- 10 Yes critical skills shortage Well, they're all going to be the same. It's writing -the ability to write. That's it. As an aside, I can train just about anybody who has the right attitude in the field;
- 11 Yes critical skills shortage At the managerial level -I would say experience. I guess the problem is, the managerial level is, in the industry, such that you have to manage people who do
- 12 No critical skills shortage
- 13 Yes critical skills shortage Not sure.
- 14 Yes critical skills shortage Training professionals to become managers without interrupting their technical responsibilities.
- 15 Yes critical skills shortage Day to day operations and people skills.
- 16 Yes critical skills shortage Leadership skills and experience in this industry.
- 17 No critical skills shortage
- 18 Yes critical skills shortage Good people skills and technical training, get along in a small-sized company.

**b. Professional level**

- 1 Yes critical skills shortage I really can't think of anything right now.
- 2 Yes critical skills shortage Software skills. Computer software. Semi-conductor design skills. System level skills. Electronic system level skills.
- 3 Yes critical skills shortage Just GIS (geographical information system) and graphics -for people who are computer-savvy. And traffic. Folks who have that background, discipline, and (e
- 4 Yes critical skills shortage Basic electronics knowledge. No (detail). The schools don't seem to be providing the basic education to enable students to go forward into more detailed area
- 5 No critical skills shortage
- 6 Yes critical skills shortage Again, computer-savvy; regulatory awareness; human resources skill are lacking throughout all levels. That's it.
- 7 No critical skills shortage
- 8 Yes critical skills shortage Analytical and writing (skills). That's about it; those are biggies.
- 9 Yes critical skills shortage We need people who have extensive scientific training; (and an) understanding of the manufacturing process. And of regulations. That's about it.
- 10 Yes critical skills shortage Well, like I said, it's the lack of ability to write effectively. No (other thing).
- 11 Yes critical skills shortage At the professional level, I guess the interdisciplinary level of either knowing the science side well -but not the business side... or vice versa. That's good.
- 12 No critical skills shortage
- 13 Yes critical skills shortage Not sure.
- 14 Yes critical skills shortage Math, science, reading and writing. General analytical skills.
- 15 Yes critical skills shortage Not enough scientists.
- 16 Yes critical skills shortage Not just degree. Would like to see more hand on experience at the school level.



- 17 No critical skills shortage
- 18 Yes critical skills shortage

**c. Technician level**

- 1 Yes critical skills shortage I really can't think of anything for that, either; I haven't been in either of those positions for a long time.
- 2 Yes critical skills shortage I don't know; I don't work at that level.
- 3 Yes critical skills shortage Again, more or less computer-savvy folks; I don't know what you'd have that listed under, but just computer-savvy folks in general. That's about all I can think
- 4 Yes critical skills shortage We're still missing... they, too, are missing the basic electronics skills. Thinking out of the box. The ability to solve a problem, take it to the next level. We have
- 5 No critical skills shortage
- 6 Yes critical skills shortage Broader understanding of alternative methods. That's kind of a general way to phrase it. Again, regulatory knowledge. That's pretty much it.
- 7 No critical skills shortage
- 8 Yes critical skills shortage Oh, I think we're about okay there, I think.
- 9 Yes critical skills shortage People having enough laboratory experience before coming to the workforce -and that's partly because there aren't many laboratories where they can get tha
- 10 Yes critical skills shortage Same. Lack of ability to effectively write. Sure, we'll through in one other thing. Maturity. Well, a lot of the entry level people have an attitude that they are owe
- 11 Yes critical skills shortage Primary laboratory skills that they should learn in school. English communication skills. That's it.
- 12 No critical skills shortage
- 13 Yes critical skills shortage Literacy is a concern ability to communicate (written and spoken) in English
- 14 Yes critical skills shortage Computer skills and writing skills.
- 15 Yes critical skills shortage Not enough people with good work ethics.
- 16 Yes critical skills shortage No experience required. Need basic math, comprehension, writing and computers.
- 17 No critical skills shortage
- 18 Yes critical skills shortage Good computer, technical, math, science, writing skills.

**d. At which level is the gap most critical?**

- 1 Professional Level
- 2 Professional Level
- 3 Professional Level
- 4 Professional Level
- 5 Not asked, no critical skills shortage.
- 6 Professional Level
- 7 Not asked, no critical skills shortage.
- 8 Professional Level
- 9 Management Level
- 10 Professional Level
- 11 Technician Level
- 12 Not asked, no critical skills shortage.
- 13 Technician Level
- 14 Professional Level
- 15 Managerial Level

- 16 Technician Level
- 17 Professional Level
- 18 Technician Level

**4. We would be interested in hearing:**

**a. How would you profile today's effective life sciences manager?**

- 1 Someone that has knowledge of new -or all- human resources law. Someone that has knowledge of that, knowledge of contracting, and knowledge of physician contract rates in the area. M
- 2 He has technical skill; he has at least 8 years experience; he has good interpersonal skills; and (has) good organizational skills. That's it.
- 3 Poor. The Peter Principal: just because someone is good at one aspect of their job doesn't mean they're a good manager. Some people are good managers, some people are good at spec
- 4 Someone who is hands on; demonstrates professionalism (and) sets a good role model, communicates well, and knows how to handle different personalities. Good at motivating people and
- 5 Well seeing how effective they have been in their previous experience is necessary. It would probably help if they were bilingual in Spanish which would enhance their ability to communicate
- 6 How do I profile? Business performance; employee retention. Profitability (follow-up probe to "business performance"). That's pretty much it.
- 7 Staying on top of budgets -that's the biggest thing we have a problem with. That's pretty much it -being able to manage a project efficiently from start to finish.
- 8 Well, organization skills; people skills; and -maybe along with organizational skills -organizational planning. I guess that's about it.
- 9 Well, it would be the opposite of what I just listed previously. In a manager, I'm looking at someone who is able to obtain funding for the company, has a good scientific background, understands
- 10 How do we profile? That's hard. Well, it would be based on, obviously, prior experience, and then, the probationary period in which they were working with us, I suppose. (Re-ask) Well, in r
- 11 I would say, obviously, that experience is number one. And knowledge of the industry and communications skills (describe today's effective manager). That's about it.
- 12 I guess... I have to think about this. I guess "dependable, responsible, very computer-literate, a people person, management experience, human resources (skills).
- 13 They understand aerospace industry and have technical understanding of industry as well as understand Unions
- 14 Interdisciplinary, professional, analytical, communications skills, people skills, build on the talents of their team.
- 15 Old fashioned management skills, someone with good people skills.
- 16 Need more interpersonal skills
- 17 Strong communication skills and advanced technical knowledge.
- 18 Good technical skills, communication skills, environmental background

**b. How would you profile an effective life sciences manager in 2018?**

- 1 Same thing; pretty much someone that keeps up with HR laws, and someone who keeps up with physician contract rates.
- 2 I would say that the requirements would not change.
- 3 In 2018? They'll have to be more sophisticated in regards to their computer knowledge. We probably won't be talking to each other. It'll all be done through computer. Things will be replaced
- 4 I have no idea. I would assume all those skills are still basic and necessary; you may have to keep up with the latest technology.
- 5 I imagine there would be a lot more technology advances by then so computer skills are imperative No.
- 6 Geez. I have to think about that. For our industry, again, effective management relating to performance and profit. Interaction with new technologies (and) communications -externally and in
- 7 I would like to see a project manager who doesn't go over budget. (And who would) get reports out in a timely manner. That's all I can think of.
- 8 Boy. Let's see. Hmm. Well, in our own situation -which would be changing some- I would be looking for people with editorial skills. Writing... like my writing -going over it and looking for flaws
- 9 Hmm. Well, someone who is able to lead a large and small team, someone who can effectively manage global outsourcing, and being able to use minimal resources and achieve greatest results
- 10 Well, I think, as time goes by, technology is going to... it may actually supersede people skills. It's already happening now. But I would think that a good manager 10 years from now would p
- 11 Oh. I hadn't thought about that one. I would say someone who's been exposed to numerous scientific cultures. 10 years from now? Probably someone who has furthered their education -b
- 12 Wow. Probably triple of what I just said. I see it all going towards technology. Probably the way we do business will be via the internet. That's all I can think of.
- 13 Not sure.



- 14 Fundamental skill sets will not change.
- 15 Highly trained to keep up with technology and good people skills.
- 16 Able to communicate at any level from management to technicians.
- 17 More involvement in the financial, production and marketing activities of the business.
- 18 Same in the future

**c. How would you profile today's effective life sciences professional?**

- 1 Someone that's been in the industry for at least 2-5 years; and someone who's been to vocational school so they know what they're applying for. That's it.
- 2 A person who is very resourceful; who is computer-literate; has more than effective interpersonal skills. And those are the only requirements.
- 3 Let's see. Well, obviously, hiring people that are actually better than you, sometimes. That's my rule of thumb. Hiring people for their specific abilities. That's about all I can say right now. Ok
- 4 Someone who's dedicated; forward-thinking, pays attention to details; follows through; and possibly thinks outside the box. I think that would take care of it.
- 5 I would say previous experience would have to show that they were consistently effective to do routine tasks without supervisor provision. No.
- 6 Strong knowledge of science disciplines/job functions. Ability to interact with management and employees. And desire for growing their knowledge base. That's it.
- 7 I don't know.
- 8 Hmm. Well, you know, one thing I haven't mentioned is, in our organization, having a good work ethic is (important). I hate clock-watchers, and having some drive is important. Long hours.
- 9 Today's? Have good experience and research in drug discovery. Understand biotech trends. Works collaboratively with other leaders. Has good communication skills. That's it.
- 10 Well, they would need a certain level of education, and they would need to have a certain level of actual experience, and they would need to demonstrate that they have the ability to act not
- 11 I would say educational level. Of how sophisticated, advanced it is. I guess the newer the education, the better. In other words, a degree, a PhD that someone got 15 years ago would not b
- 12 The same, the way I just answered. Dependable, responsible, computer literate (with a) willing to learn. No (other thing comes to mind).
- 13 Not sure.
- 14 Well developed and knowledgeable in the discipline. Able to communicate.
- 15 Highly trained to keep up with technology and good computer skills.
- 16 They have knowledge and theory but no hands on.
- 17 No answer
- 18 Not applicable.

**d. How would you profile an effective life sciences professional in 2018?**

- 1 The same, pretty much.
- 2 A person who is more than just effective in computer skills, who has superlative computer skills. And (is) very insightful (and) understanding of position requirements. Of course, superlative
- 3 Pretty much what I say before, with regards to being technologically advanced, being able to hire folks that are highly qualified, and always getting folks that are productive, obviously.
- 4 Basically the same thing. And then, keeping up with modern technology. I think that takes care of it.
- 5 They must be able to do everything I previously said in advanced computer formats as the technology will be advanced. No.
- 6 Again, the desire to increase their knowledge base. Strong work ethic. Understanding of job functions. Effective use of media and communication technologies -to interact with management
- 7 I don't know.
- 8 Well, they better have computer skills. Probably... you can't beat having a good education, a good background. 2018? Probably writing skills, again. That'll never drop off. That's it.
- 9 Able to reduce the risk of unsuccessful discoveries. Let me see. Able to move research faster -from discovery to product. Have better training in business -and science- before entering the
- 10 I would think exactly the same way, I really would. No (other thing he can add), because I don't see that there would be any significant change in their duties or skill levels.
- 11 A person who has kept up on their scientific knowledge -either by research or meetings- as opposed to someone who has gotten their degree and gone to work and not kept up on their con
- 12 Boy these are pretty deep questions. The same. Just, definitely computer-literate. I'm sure it'll be 10 times more than it is now.



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- 13 They are literate and understand new production technologies
- 14 Stay current and knowledgeable. People skills.
- 15 Highly trained to keep up with technology, with good computer skills.
- 16 Theory and willing to get their hands dirty.
- 17 Growth in environmental and biomedical engineering.
- 18 Not applicable.

**e. How would you profile today's effective technician?**

- 1 Someone that has 2-5 years experience and a bunch of vocation school. (The specifics) depend on what they're applying for: medical billing, medical assisting, medical administration, etc.
- 2 I don't deal with technicians.
- 3 Making good use of their time and succeeding in getting the jobs done on time; cutting the costs and getting it done for under cost. Doing the job and doing it well. That's about it; I can't thin
- 4 Someone with a good work ethic, creative mind, (and who is) good at problem-solving, (and who has) good technical skills. I think that would do it.
- 5 Someone that is able to perform the functions and tasks consistently and safely. No.
- 6 Strong work ethic. Desire to increase their knowledge base. Thoroughness and completeness of job functions. Understanding and adherence to standard procedures. That'll do it.
- 7 Not applicable.
- 8 Oh, a person that's willing to do new things. No we have) a lot of technicians. I wonder if that includes someone who works in the office? If so, then I would say computer skills. I said flexibi
- 9 Effective technician? Let me see. Detail-oriented. Reliable. Learns) procedures quickly. That's about it for technicians.
- 10 Well, the technician, of course, would have to have a minimal amount of education -which could be a 4 year degree. Preferably some field experience -working in the industry- but if not exp
- 11 Somebody who wants to work hard; and someone who's willing to be dedicated -which I suppose is across the industries. And also, someone who wants to advance. That's it.
- 12 You know, I don't really have a technician -so I wouldn't be able to answer that effectively.
- 13 Not sure.
- 14 More focused skill set. Increase people skills.
- 15 Educated and someone with a good work ethic.
- 16 Basic math, comprehension, computers, communication.
- 17 No answer
- 18 Dependability (work ethic), computer skills, team player, flexible, calm demeanor, adapt to new technology.

**f. An effective technician in 2018?**

- 1 Pretty much with the same qualities; they'll have had to have 2-5 years in the field, and have gone to a vocational school that pertains to the duties that they're applying for.
- 2 I'm drawing a blank on that.
- 3 About the same, actually; probably the technology knowledge and expertise will be a key note, for some folks. But, like I say, that has to do with keeping up on the education -so you can ke
- 4 I would say the same thing -and also, keeping up with the latest technology. No (other comments).
- 5 They would need the added ability to understand databases to input performance. Some level of computer skills will be needed so that they know how to record data.
- 6 Desire to increase knowledge base; desire to understand and utilize new technologies; adherence to standard procedures; and ability to improve those standard procedures. That'll do it for
- 7 Not applicable.
- 8 Hmm. Much the same, I'd guess. I can't really envision how that might change.
- 9 They should be equipped with more basic knowledge; can utilize latest gadgets to facilitate the process around the laboratory. And contribute more scientific knowledge to the team. Can or
- 10 Exactly the same.
- 11 Well again, one who has shown the willing to continue their education (and) keep up with the education. That's a recurring theme of mine. And... that's good, keep it at that.



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- 12 Yeah, I guess I couldn't answer.
- 13 Not sure.
- 14 Same as now.
- 15 Better educated and trained in order to stay up with new technology and someone with a good work ethic.
- 16 Willing to grow with company - willing to learn - willing to pay attention and have commitment to this industry.
- 17 No answer
- 18 Problem-solving skills, technical skills and good decision-making skills important for the future.

**5. Do the current leaders in your company have a broad span of knowledge that crosses beyond the scientific focus?**

- 1 Yes
- 2 Yes
- 3 Yes
- 4 Yes
- 5 Yes
- 6 Yes
- 7 Yes
- 8 Yes
- 9 Yes
- 10 Yes
- 11 No
- 12 Yes
- 13 Yes
- 14 Yes
- 15 No
- 16 Yes
- 17 No
- 18 No answer

**a. What skills will future leaders need to have?**

- 1 Oh boy. I would say in the future, it's going to be geared more towards people having an extensive education -like a Bachelors or Masters degree. That's all I can think of.
- 2 I don't now how to answer that.
- 3 Leaders in general? Motivating staff; being on the cutting edge; getting more done in less time; and, I guess... it's kind of hard to put... attracting the best and brightest... so, I guess, "to attr
- 4 Good communication. Keeping up with the technology. Good foresight. A broad base of good business skills and operations.
- 5 Probably more scientific background and more electronic skills with concern to electronic devices. I suppose they would need to have an electronic engineering degree as well.
- 6 Business administration skills. New technology skills. Human resource skills. Scientific skills. That's pretty much it.
- 7 I don't know. No (thoughts at all).
- 8 Well, they would need to have much the same skills. Be broad; everything from analytical capacity to capacity to operate heavy equipment. The last thing I would've every thought when I gc
- 9 Well, they should have relevant business experience -particularly to the biotech industry. That's about it.

- 10 Legal skills. Knowledge of State and Federal environmental law; contract law; and, business law. I guess that's support of all-encompassing. Say contract law and construction law. And Fec
- 11 Future leaders are going to have to better their scientific writing skills. They're going to have to learn more business principles -in addition to their scientific stuff- and be able to think "outside
- 12 Wow. Okay, let's see. The ability to lead, I guess. And (the ability) to learn. I guess an open mind. A way to organize and get people motivated. Task list -a way to get the job done. The abili
- 13 Develop new opportunities to get good people and reduce costs of business
- 14 Interdisciplinary, integrate data, extract meaningful conclusions from a wealth of data.
- 15 More personal skills (a people person)
- 16 Interpersonal skills, able to deal levels of communication. Leadership - able to lead by example.
- 17 Strong specialized knowledge and good communication and/or sales or human resources field.
- 18 Adapt to technology changes, new environmental regulations

**b. Where will you be looking for the future leaders?**

- 1 On the internet. Like Monster Jobs or independent recruiting agencies -on the internet. Local newspapers. Local newspaper ads. That's all I can think of.
- 2 That is certainly a global question. I don't know.
- 3 I think it'll be not just nationally; I think it'll be internationally. We already are (doing this). I got more responses from other places in the world than from the U.S. -the last time I looked for a C
- 4 Good question. Well, we look internally first. And then we do recruiting from the outside. Sometimes agencies; internet; word of mouth. I think that covers it.
- 5 Typically within the industry, the scientific support trades and recent college graduates leaving schools.
- 6 Everywhere. Internally. Competitive companies. Academia... whatever you want to call it... college universities. That's pretty much it.
- 7 I don't know. No (thoughts at all).
- 8 Well, if we're looking for the professional, we advertise at universities and colleges -from coast to coast. Oh, I think that would pretty much... well, not necessarily. My partner has a HS educ
- 9 Where? A lot of them will be by referral -and by people in the industry. And we'll use recruiters. Well, people who have been profiled by our industry magazines. Most likely, we'll rely on rec
- 10 That's a good question. The people that find their way into our industry can come from any number of varying disciplines. Most come from history or anthropology; so I would think that we w
- 11 I would say young professionals, new graduates of graduate schools. People who have had international experience. Probably (would find them in) Asia. No, that's where they're all (at). Th
- 12 Our youth. I guess -in my organization, we're starting a youth advisory- word of mouth. We'll acknowledge we're ready to our youth volunteers. No (other information).
- 13 Within the Military
- 14 In-house
- 15 Local colleges and universities
- 16 Willing to learn. Willing to commit to this company.
- 17 No answer
- 18 The Military.

**6. a. Are there specific educational institutions or other types of institutions (e.g. community colleges four-year universities, manufacturing technology centers) that have been particularly good in meeting your skill needs?**

- 1 The last one you mentioned -the manufacturing technology centers. No (specific institutions).
- 2 Traditional 4 year university colleges and universities. Stanford. UC Berkley. San Luis Obispo. Cal Poly. Those in particular.
- 3 I'd say 4 year universities, definitely. I think for the folks that are interested in my industry, they're very focused on specific disciplines; so I'd say that's why they'd choose that. I'd say most o
- 4 None.
- 5 UC Davis and Cal-Poly They have the disciplines that relate to the product that we manufacture We manufacture measuring instruments.
- 6 Universities and colleges, of course. UCSD. UC Irvine. San Diego State. That's pretty much it for the California area. None that I'll list at this time.

7 I don't know.

8 Oh, the 4 year colleges and universities. Well, that kind of depends on the precise line of work; we've had several people from Cornell University that were good. They were biologists. We had

9 Well, usually 4 year universities. Well, you have to be at the graduate level. Leading research universities like UCLA, Stanford, and other Ivy League schools that are strong in scientific research

10 Actually, none have.

11 4 year universities (and) research institutions. University of California, Riverside. Any of the University of California institutions. Those are the research institutions; they're set up to do research

12 Colleges. Community. Copper Mountain Community College. College of the Desert. That's it. No (other examples).

13 Community Colleges and Universities in the area

14 4 year universities

15 4 year college. Need degree to pass State legislature.

16 No answer

17 University of California Riverside (UCR), RCC, Berkeley, Fullerton Cal State

18 The Military, skills of military-trained individuals.

**b. Are there ones that have been bad?**

1 Not that I know of.

2 No.

3 No. Can't really think of any; couldn't tell ya. I think it has more to do with the person than the educational institution.

4 Community colleges. Universities. Technical schools.

5 No.

6 No.

7 I don't know.

8 We had a number of people from the University of Colorado that were, disappointing, shall we say. Basically, it was work ethic. They looked for a job in the sciences that was an 8 hour job;

9 Well, for some people, UCR. We get some good ones, and some not-so-good ones. No (other examples).

10 Oh, most definitely. 4 year schools -major universities. They do not offer a curriculum that -how can I put this- addresses the types of services that we offer -nor do they offer a curriculum in

11 No.

12 None that I know of, no.

13 No.

14 No, not really

15 All in some cases. There have been people with all levels of education that are lacking in the skills needed for this industry.

16 No.

17 No.

18 Did not answer.

**7. Are there particular educational institutions you think would be good at meeting the new skill requirements that you foresee?**

1 No

2 Yes Stanford. Berkeley. San Jose State. The Jesuit University in the South Bay -I forget the name- as well as Cal Poly. Because they're in the forefront.

3 No

4 Yes Well, it's more of a hope -that the colleges, junior colleges, and vocational schools will improve their curriculums. I can't think of anything else.



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- 5 No
- 6 Yes                      Some of the community college institutions -focus on technology skills. No (others).
- 7 No
- 8 Yes                      Most of the universities and colleges would have the potential to produce good workers. A lot of it isn't the institution; it's the individual. I think, for example, an
- 9 No
- 10 Yes                     Well, it would be the 4 year schools -if they adapted changes to their curriculum.
- 11 Yes                     I would think if the UC system paid more attention to the undergraduate program, you'd have a better skill set coming out. Unfortunately, the UC has the facilit
- 12 Yes                     I don't know -I'm just sure there are (such institutions). If I were looking, I'd probably be able to answer that better.
- 13 Not sure.
- 14 Yes                     4 year institutions. All professionals require a bachelor's degree.
- 15 Yes                     Cal State system. We have some employees that came from the Cal State system that are working out very well and some that are attending Cal State institu
- 16 Yes                     High school. Basic writing, math, comprehension, course on just work ethics.
- 17 No
- 18 No answer

**8. What do you think needs to be done to ensure that our educational institutions prepare individuals for the skilled jobs you see in the future?**

- 1 Have more hands on -instead of theory. When you go to the schools, it's more based on theory. It's different when you're doing hands one. That's all I can think of.
- 2 That they're adequately funded. Well, that there's an adequate flow of students -of American students. American students are not as well-prepared as they used to be to enter the hard scier
- 3 Vocationally, giving them that option. Like, we have the same type of apprenticeship programs where people get trained in what they're interested in. So, I think that would be a key thing, gi
- 4 Maybe work with companies more to see what they're looking for... what they need. Diversify their curriculum... maybe go back to some of the basics. Diversify, so their education isn't focus
- 5 I think they need to do more practical type of experience Like an internship type of deal where they could get experience.
- 6 Geez. For our business, it's maintaining (a) broad scope to their education -with a strong focus on the scientific... but making sure (also) that business skills and people skills are (included) i
- 7 I don't know.
- 8 Well, they need to give a pretty rigorous education; I've seen some schools that have developed programs that... the students just don't seem to know anything. I think it's the nature of the p
- 9 There need to be more practical skills -than theoretical. A lot of students come in with courses on how biology or chemistry work -but they've never worked in a laboratory before. For gradu
- 10 I'll give you a laundry list: an introduction to State and Federal environmental law; and introduction to the opportunities that are actually available as a profession; emphasis on advanced wri
- 11 That the state needs to fund education, undergraduate education -in the state of California- the way it used to -in the 60s and 70s. I think that the state of California needs to also fund more
- 12 Hmm. I guess keep them interested, motivated, and -that's all I can think of.
- 13 Not sure.
- 14 Still have well rounded collegic education, not just professional.
- 15 Keep up with new technology and processes.
- 16 At the professional level the education and theory is great. But graduates expect too much money and not willing to work out in the field and get their hands dirty. Would like to see universit
- 17 Keep up with the updated and modern technology.
- 18 Teach computer skills and technical training. Math, science and writing skills.

**9. What are some of your key concerns about ensuring a skilled workforce in the future?**



Lack of interest in becoming a "bench" scientist?	Lack of system for quickly incorporating needed changes into the education system?	Lack of easily accessible training for professionals and management to obtain the added knowledge necessary as a corporation moves into different areas?	Lack of a broad understanding by educators of the key elements that are the driving force of your industry?	Lack of basic math and science skills?
1 No	No	Yes	Yes	No
2 Yes	Yes	Yes	No	Yes
3 No	Yes	Yes	Yes	No
4 Yes	Yes	Yes	Yes	Yes
5 No	Yes	Yes	Yes	Yes
6 Yes	Yes	No	Yes	No
7 No	No	No	No	No
8 No	No	No	No	Yes
9 Yes	Yes	Yes	Yes	Yes
10 No	Yes	Yes	Yes	No
11 Yes	Yes	No	Yes	Yes
12 No	No	No	No	Yes
13 Not sure.	Not sure.	Not sure.	Not sure.	Not sure.
14 No	Maybe.	Yes	No	Yes
15 No	Yes	Yes	No	Yes
16 Yes	No	No	Yes	Yes
17 No	Yes	Yes	No	No
18 No	No	No	No	Yes

**10. What is the key message concerning workforce development that you, as a life sciences executive would like to give to California leadership at the state and local level?**

- 1 Give as much knowledge to the children in school as you can, and let them know how difficult it is out there. I can't think of anything else.
- 2 It centers around the fact that not enough HS students envision a career in the sciences, and cannot receive adequate instruction in the sciences -either because of their own choice, or bec
- 3 Stop wasting money. I think we pay way too much to administrative staff who do absolutely nothing in our educational system. There's a lot of "do nothings" out there that get high paying jol
- 4 To encourage the educational institutions to take a closer look at what business really needs. Maybe have educational classes to motivate young people to acquire a better work ethic (and
- 5 I think we probably need to develop more skilled workers due to the lack of educational programs and teachers willing to teach them.
- 6 Intelligence doesn't equate to a successful employee or professional; a successful employee or professional utilizes their intelligence to make sure they develop, utilize, and continue to dev
- 7 I don't know. No -because I don't understand geology or engineering.
- 8 Key message? Well... let's see. I had something going through my mind. I think that the college and university levels... the students know a lot of details -they might know about birds or ma
- 9 A message? From an educational point of view, we need to integrate theories with a practical skill set; from a business operation point of view, if the state of California wants to keep busine
- 10 Rebuild our state's education system. And stop turning out people who are only marginally literate. That's basically it. I think the minimum bar of education has been lowered. There's a sch

- 11 The key is that, every graduate of secondary education should be able to communicate basic scientific principles. Emphasize "every graduate of secondary education in the state of California"
- 12 Hmm. That's a toughie. I'm not sure. I guess to strive to be committed, and to commit to educate and believe in our workforce people? I don't know.
- 13 They should help with tele-commuting and support opportunities to work from home
- 14 Understanding basic science, math, interdisciplinary science. Broad scientific understanding. Basic math - understanding how it integrates into the culture.
- 15 More money for education and training in order to keep up with new technology.
- 16 At the professional level education and certificates are great - but institutions need to provide student with the reality of this industry - more hands on.
- 17 Provide means for students to attract them in this field. Offer better scholarships and grants to accomplish this goal.
- 18 Focus teaching math, science and writing.

low where this industry will be in 10 years. Managed care and HMO's are the main ones (things driving the industry).

to fill these positions... locating the talent. For the electronics industry, one of the big issues is capital, and another issue is locating adequate talent to fill the positions. Innovation. (Drives the electronics  
magine. Having alternative plans from what we're used to, I suppose. On an HR level, the one thing that I've noticed is the difference between older workers and younger workers. You look for the young  
ology that our components would be a part of. Ideas of our industry? Probably looking for more automation in our industry. All these ways to make the product quality better, and (to) reduce the price.

to transfer those to a working business model is very difficult. In our industry, things are very large-corporation-driven; and a lot of the best ideas are from individuals in small companies -and it's very diff  
sh.

at bothers me... it seems like I see a lack of ability on (the part of) a lot of people in the area to look ahead. 5 years or less... they don't seem to be grasping what may be going on 5 years down the line.  
be a more open collaboration with universities, and more government funding available -to test different ideas first. Because, if you form a company too soon, it can fail. So, it's a little bit better to have th  
as opposed to actually performing "true" -put emphasis on "true" archaeological and historical investigations. Well, we also have a problem, which I see as continuing to grow, with special interest group  
when they want to develop those ideas, they can't find enough skilled technicians to work on them -the reason being is that the entrepreneurial investments won't pay the key technicians a salary that is  
y addressing economic and cultural health, and environmental community concerns.

it hasn't been done yet.

going to change economics all the way around. Spread it out. Obviously, technology -like computers and that sort of thing- are going to advance and play more of a role in peoples' lives. More countries

o, I can't (think of anything else). They might have some breakthroughs in rehabilitating habitats in large areas -by which I mean a square mile or more. plines -for example, physics and biology are now biophysics; things that can be used for diagnostics and treatments are starting to merge into one; integrative care for patients that includes traditional w access to this technology will come down to the point that we will have more ready access to it. Well, just to clarify that, there's a lot of techniques that can be applied to the finds that we make -in hope:

unger folks do their jobs differently. Their processes are different. There's a generational type thing/difference in the way they get things done. They may have technological skills, but may lack skills tha c background. Mechanical background.

ational shipping knowledge -import/export knowledge.

ow a lot of geology. I can't think of anything (else) off hand.

ve basic science training, and also understand regulations, and know the importance of having a product that is safe, effective, and can come out in a relatively short period of time -not having, say, 20 y

required to have computer, word processing and graphics skills.

need those degrees for someone without that experience.

lvance education is required -at least a Masters degree- and several years of experience. In the environmental field, education requirements are much looser; a HS education is required -and at least 10 planning. It can cover a vast amount of jobs: noise study, air planning, archaeological... it's a laundry list. But our particular offices' main emphasis is planning and biology.

s- and they go to seminars to brush up on what's going on... learn about new things... I don't know what -it's geology.

i. That doesn't require a scientific education -but requires people skills. Most generally (these people) would have at least a HS education. That's about it.

ng for research. That's about it.

rk -for management. Well, the experience would have to be within the framework of the services we provide -which are quite broad, actually. They would have to have experience with all the services we  
in my industry.

education is required. In the asbestos assessment and the lead based paint assessment, a HS education is required -and some specific training. The training specific to lead paint assessment and asb  
paleontology, cultural studies, air quality studies, noise studies, traffic engineering... with computers, there are GIS, mapping, and that kind of thing.  
good. They have to be computer literate. The main thing is the experience -because we are in a very specialized niche. That'd probably do it.  
years experience.

ney're not worth much. I said writing, didn't I? And analytical skills.

school, where you learn how to lay out things and do things properly. It's kind of like "boot camp".  
oes with English as their primary language. Writing skills. And scientific communication skills.

medical terminology, and the ability to take vitals, things like that.

range of laboratory skills -from dissection of carcasses to chemical analysis... running chemical tests. But we can teach them this.

paying very well. The industry doesn't pay well as a whole. That's just the economics of the situation. That's good.

signing or one year of professional engineering.



Now if I can say this without stepping on my toes- is to find someone with experience -from the younger generation. They just don't seem to be out there. It seems like when we go to hire someone, they're not good with people skills. There are a lot of scientists who are not good with people skills. Human resource skills.

How to deal with an unexpected problem. Over the years, I've found that I've had to deal with these.

Technical skills or the other, and you need both. That's it.

; but I cannot teach somebody how to write properly. I think anyone in this field will tell you the same thing. I don't think the schools are doing a good enough job at this. It's the lack of the ability to write clearly. I don't understand the culture -of the technicians- very well. Because the problem with the technicians is they don't have English as their first language. That's good.

experience with) projects for that sort of thing. I think we had an ad for one of those for over a year, and didn't get a response. Once they get snagged, they're hard to get.

is of engineering. The schools seem to be directing everybody more into computers, and not (into) the full range of knowledge of the electronics industry. It's just really frustrating... these kids'll come out

of right now.

There are some work ethic problems in that area, as well. Work ethic? Like, come to work everyday. Pay attention to details. I think that's it.

Not much prior experience before coming to work with us. That's it.

They just want a job and salary -rather than the attitude that they have to earn that job. I have people from about age 35 on down that exhibit that; it's a generation thing.

Medical billing knowledge. That's all I can think of.

Specialized jobs. Communication is probably the key note, I would think. Just communicating; I don't know how to explain it any better. I guess the ability to enhance your employees ability. Giving them the tools to do the job. Good employees. Good organizational skills. And a good work ethic. Ability to communicate effectively with other employees.

Patents and patents, and has leadership skills. That should be good.

In my opinion, an effective manager has to have good people skills; they have to have the ability to communicate effectively both in writing and verbally; (and) not take themselves too seriously. To temper their

is supported by programs. That's about it.

Internally- for customers and employee management. That's it.

That's it. I guess that's it.

Output. That's it.

Probably need to pretty much have the same approach. The same balance between what they see as the goals they need to attain, and how they do it. How they either reward or punish the people they manage. Both in the managerial and scientific fields. You have to acquire more education in the field -because it's rapidly changing. Continuing education -let me put it that way- is of the utmost importance.

Obviously, again, being technically savvy, and knowing the laws for HR... being aware of that sort of thing and (of) all the legalities. There are a lot of laws in California. And making good judgment in hiring

A willingness to learn. One other thing that's perhaps a bit different in our organization -I don't know- is the ability to discuss issues -which requires some knowledge. I don't mind somebody that talks back not only as a team member, but also (to act) independently. That's about it. It's not as much as someone who got their degree 4 years ago -because the knowledge base is so different.

communication skills (are also needed).

with management and employees. That'll do it.

for the entire workforce. That's it.

Continuing education. In other words, education does not stop after you get your degree.

of anything else, really. Actually, there is one other thing. Staying advanced, with their education, and staying ahead, knowing the newest things. So I'd say, "education". Never stop learning.

ility, didn't I? A technician we hire will be exposed to new tasks that they'd never dream of doing; so if they're a little flexible... (that would be good). Well, as you were typing, I was thinking that we also I  
erience acquired through participation in school projects. And then, in addition, as most of the entry level people in our business are in their 20s, you would certainly want to seek out the ones that have

ep up with the knowledge and be on the cutting edge.

technicians.

ganize and critically review current status and help making current processes faster.

act the highest quality staff" -so you can stay on the cutting edge, so to speak.

ot my PhD is that I would be driving a bulldozer; but it happens. Some scientists have and need skills along those lines. We've done everything from shooting shotguns to riding bulldozers to chopping tr



deral and State law. Those are definitely skills that will be needed at a higher level. No (other skills/examples come to mind).  
e the box" and not be so rigid. Flexibility.  
ity to create and catch a vision. I guess a good leader will lead.

31S position. That's it. I think one of the issues pertaining to a persons' vocation is that a person fresh out of school might not have the experience; but on the other hand, a person just out of school might

ation; but he had a lot of agricultural experience before he joined with us. We have a lot of equipment, and need people who can maintain equipment -but we can usually find those locally. Leaders? The  
ruiters who will be available at that time, and who know the ins and outs.  
ould continue to get most of our prospects from those two disciplines. The (others) would come from... some would have business backgrounds; some would have purer science backgrounds; some might  
e Asians are coming over here to get the scientific training, and there's very few Americans getting involved in this; so that's where the talent is.

if them are graduates from 4 year universities. I think I know that for a great many people, Cal Poly, Irvine, and UCLA (are examples).

had quite a few from Arizona State -biologists, again. You know, there's a little college in Indiana -Earlham, I believe. They were pretty darn good... in fact, one of them, from there, is world famous... he v  
earch. UCSD; UCR. That's it.

arch -as opposed to Cal State, which doesn't typically have that type of education.

that not the way it works in the sciences. You don't turn it off like that. There is (another one). Of all places, Purdue University. A lot of youngsters we had there were more interested in smoking pot tha  
environmental law. The 4 year schools are the basic institutions that these people come out of. Trade schools don't offer this, and community colleges only do the basics, the beginning material. That's

ly university system in any state is likely to produce good people. Interest and enthusiasm are important. One of the problems we had is that there are some people that might have good grades and cre  
ties for the education, but the UC doesn't emphasize undergraduate education as much as graduate education. They have the facilities for a good undergraduate education, but they don't have the comr  
tions.

nces. The mathematical backgrounds are not as rigorous as they used to be. American students are not electing math and science courses as much as they used to -because it'll impact their GPAs, and  
iving people that opportunity. It happened to me. Well, I started off going into the medical field, didn't like the clinical aspect, and then went into the business side. Now, I'm not even healthcare. I know a  
sed so much in one area.

in their education. No (other detail).

programs -not the students. There is a field that some people have started call conservation biology. I've found the students associated with that program are not knowledgeable. The programs are too d  
ate students, they don't know anything about business; they only know how to do research in academia. Well, have more internships -or externships- available -so students can get practical skills during  
iting skills; and, exposure at the academic level, to the actual types of work that they would encounter in the private sector. That's about it.  
of community college education, and fund secondary education -so more students have the ability to read and write correctly.

ies provide students with more hands on.



ia should be able to communicate basic scientific principles". That's short and sweet, gets to the point, and gets the point across.

; industry). Computer-assisted location of talent (drives the recruiting industry).

est folks that are smart, but there's a different mindset in the younger employees. I think most young folks are looking for higher salaries and reasonable benefits, and the older people are looking for rea

ficult to compete... to get that into a large business model.

. That's about it.

ie ideas incubate in the universities, and then have people with business experience launch the products).

s influencing both our ability to perform our work, and the way that we do it. Well, that's a pet issue of mine. Indian tribes have become very powerful and influential from revenue gained from gaming, ar  
competitive with the non-scientific industries. And I view this as short-sighted -within the industry. Let me make an analogy on that, okay? Just as when the industrial revolution started a 100 years ago

are getting exposed to that -if they're not already.



estern medicines with complimentary therapies. It could be functional foods, or it could even be meditation, or exercises -that help the body recover.  
s of learning more about their age, function, and distribution; but, we work on fixed budgets for the most part, and a lot of what is possible to do is not economically feasible -due to budgetary constraints

it older workers have that we take for granted. Good manners is my biggest pest peeve. That might not sound important... but it is. Especially dealing with customers. That's a problem we have in the Ur

years of research before it comes out.

) years experience.

we provide. Our firm specializes in the broad category known in the environment assessment business as cultural resources. That includes identification and evaluation of prehistoric sites, as well as historic

resources assessment. In other words, coursework.



e from a more mature generation. And, as people approach the retirement age, we really need to bring people here from the younger generation to replace them. Good work ethic (is also missing). Tha

effectively -however you want to define that. Basic grammar, vocabulary, and the ability to write logically, and organize thoughts in a logical way.

it of ITT, and they'll only know computers -not the fundamentals of engineering.



training and then trusting them to do their job, that kind of thing. Some people are control freaks.

their goals as managers with the fact that they're actually working with real people. A lot of managers have preset goals that they want to attain -at, generally any cost. Because they want their superiors t

have power over to bend to their will. Because that's basically what it all comes down to.

g... getting the right employees. Which is very difficult because of the questions you can ask because of HR laws. I think there's a lot of bureaucracy involved in that these days -from what I've seen. Son

ick -especially if they're right- and speaks up. I don't like somebody that has to be told what to do (with) every move they make. I guess you can say, "someone who can work independently".

have a need for heavy equipment operators -and I guess that would fall under the technician category. Well, if they've picked up training on how to operate heavy equipment... it's not something that we the most positive work attitude. And that's about all I've got to say about that.



ails through dense vegetation. Well, shotguns, for example -we we're interested in what birds eat, so we shot a lot of them, took them to the laboratory, opened them up, and saw what they eat. So, that

it have the newest and freshest ideas; so it works both ways, and can be beneficial in both ways.

That would primarily be from colleges and universities. Probably not (any other place).

They might have legal backgrounds. That's about it, I would think.

worked for us for a while. Well, he was mostly interested in birds -and he has found at least 6 new species of birds -new to science- in South America and Madagascar. He had a Bachelor's degree in bio

in working. We had a couple of good ones from there too.

not a slam towards them. It's just the way that it is. The burden is on the 4 year colleges, and they're not meeting it. So people have to get this training on the job and/or in seminars.

dentials, but they don't want to do any labor. (Re-ask question) Arizona State would be one. Conceivably, we could get people from the University of Riverside; no reason to leave out a whole host of other options. Commitment for a good undergraduate education.

and they prefer softer subjects. Also, the HS science teachers aren't as prepared as they used to be -because if they have a good background, they can make more money in industry. A lot of people that go into a field and have studied it, and have no experience in that field. So I think it helps to have the opportunity to work in the field you think you want to work in, so you have the opportunity to gain experience.

diverse. I've seen students from these programs come out here, and have questioned them to see what they know, and what their backgrounds are. And I have to say, people in this "conservation biology" program are a lot more diverse than the summertime. Basic student business etiquette -such as being on time, or -when requesting dailies- they need to have better business etiquette. That's about it, for now.

en's' educations bills -not having others who don't have kids pay for that. If the parents have to pay for it, it'll hit them in the pocketbook. A recent example out here was a story in the news about all the s

science, and of the things they ask from us. No (other thing to add).

eed better business incentives to stay in California.

it's hard to raise it. That's just my "old guy" opinion.



ed location of talent (drives the recruiting industry).

there's a different mindset in the younger employees. I think most young folks are looking for higher salaries and reasonable benefits, and the older people are looking for reasonable salaries and high

at into a large business model.

ersities, and then have people with business experience launch the products).

/ to perform our work, and the way that we do it. Well, that's a pet issue of mine. Indian tribes have become very powerful and influential from revenue gained from gaming, and are now influencing gove  
ientific industries. And I view this as short-sighted -within the industry. Let me make an analogy on that, okay? Just as when the industrial revolution started a 100 years ago (and) we needed factory wc

-if they're not already.

plementary therapies. It could be functional foods, or it could even be meditation, or exercises -that help the body recover.

air age, function, and distribution; but, we work on fixed budgets for the most part, and a lot of what is possible to do is not economically feasible -due to budgetary constraints.

e take for granted. Good manners is my biggest pest peeve. That might not sound important... but it is. Especially dealing with customers. That's a problem we have in the United States.

omes out.



res in the broad category known in the environment assessment business as cultural resources. That includes identification and evaluation of prehistoric sites, as well as historic sites and structures. The

words, coursework.



At the retirement age, we really need to bring people here from the younger generation to replace them. Good work ethic (is also missing). That pretty much covers everything.

Grammar, vocabulary, and the ability to write logically, and organize thoughts in a logical way.

Requirements of engineering.



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