People, Productivity, And Prosperity

Rewriting The Book On Job Preparation In Oregon

An Analysis Of The Oregon Business Council's Focus Groups On Education And Competitive Advantage

December 1996

OREGON BUSINESS COUNCIL

Executive Summary

The conclusion was unanimous

In a 1996 study by the Oregon Business Council, firms across Oregon stated that workers are the key to competitiveness and the number one factor for business success. Businesses outlined their challenges, and chief among them is working in an environment of constant change. Employers said that it is time to rewrite the book on job preparation, blending separate volumes on school years and work years into a seamless whole called *lifelong learning*. They agreed that employee skill levels, attitudes, adaptability and access to training are directly related to productivity, profits and increased wages. Nearly all also believe that weakness in the current system of K through 12 and higher education are holding them back.

The good news? Some of the state's most successful employers are finding that effective human resource strategies provide competitive advantage in Oregon, and many successful models for strengthening the workforce are already in place.

In a series of 33 focus groups representing a diverse cross-section of the Oregon economy, results across business sectors and job types were surprisingly consistent. Human resource directors, division heads and line managers identified significant challenges at all levels of employment:

- A frustrating mismatch between what is taught in high schools, colleges and universities and what is needed on the job
- Shortages of skilled technicians, computer engineers, and information service workers
- A lack of workers, young and old, with the communication, problem solving and teamwork skills needed in today's fast-paced, quality-focused global marketplace

From The Focus Groups:

Question:

Assume the vision for education you have described occurs. How big a difference would it make to the competitiveness of this company?

Responses:

- *How about for this country?*
- *It might be the difference between being a $200 million company and a $500 million company, and being in new markets and having people making the right decisions.*
- *The high tech industry in this area would be 10 times larger if there were a higher education infrastructure to support it.*
- *It would have an enormous impact on society as a whole.*

- The inability of inexperienced workers to be productive
- The increasing trend to look outside of Oregon for experienced labor
- The lack of high quality, accessible continuing education programs to help workers keep up with the demands of change

Many current responses to these problems are agonizingly short term. Businesses raid their competitors for experienced people, driving up labor costs and creating instability in some sectors, especially high technology. Businesses recruit outside the state to find engineers, managers, sales professionals, and even some technicians—positions which do not require a four-year degree. Oregonians are being left behind as high wage jobs go to trained workers from California, Texas and elsewhere who are attracted by Oregon's quality of life. Some businesses even say that they may expand outside the state rather than here, in order to locate closer to a larger qualified labor pool.

As businesses continue their search for long-term solutions, employers are coming up with an impressive range of creative responses to these issues. The focus group discussions demonstrated that some trends predominate.

- Many businesses are being forced to find new ways to meet their workforce needs, modifying or even abandoning strategies that worked well in the past
- Relatively few employers go directly to schools to look for new workers, preferring experienced workers who can be productive right away
- Internships are one of the most popular ways to bring young people on board, and many businesses are interested in expanding the internship concept in a variety of ways with high schools, community colleges and universities

> *With regard to the availability of professionals, managers and administrators in Oregon, we have a supply-side problem. There isn't a big enough supply, whether from universities or other companies. We are unable to find people and the prices we have to pay are going up dramatically.*
>
> *Focus Group Participant*

For some businesses that used to provide significant entry level training, the "lean and mean" approach of the nineties requires employees to be productive from day one. Teaching newcomers is seen as a drain, as talented, experienced staff must focus their efforts on keeping up with prolific change. A leading financial services employer said, "Years ago people started with a training program, but we don't have that luxury anymore. Now people have to go to work right away."

Even for companies that hire experienced workers, there is a strong need for continuing education. Businesses report a serious gap between what is available and what they need, especially in high technology. Many employers are turning to expensive proprietary training or going it alone. One of Oregon's best known high tech employers put it this way, "Oregon schools aren't focused on what we need or equipped to deliver it. Many people here learn on the job and go to 'Powell's University' where we spend thousands of dollars a year on technical books."

Although most businesses have yet to solve all of their training problems, there are notable exceptions that demonstrate that powerful results can be achieved when business and education work together. Two examples include ultrasound technician training, where community colleges have joined with Oregon health care providers to supply needed

technicians; and Wacker Siltronic which, in partnership with Portland Community College, Portland Public Schools and the Portland Development Commission, has established the Semiconductor Training Center at Benson High School.

As the labor market tightens and competitive forces continue their rapid transformation of the marketplace, businesses say human resource challenges are the most significant impediment to growth. Oregon firms know they can't solve these problems alone, and they believe that the state's schools, colleges and universities must do more to prepare Oregonians for the world of work. Focus group participants expressed frustration with the inability of Oregon's education institutions to produce the kinds of workers they need or provide adequate training programs for upgrading the skills of the current workforce. In the minds of Oregon's employers, the need for change is obvious; again and again, participants stated that education must become more responsive, adopting a customer service approach similar to that in the private sector.

Despite this frustration, businesses are largely sympathetic to the plight of an education system plagued with funding cuts, financial instability and the upheaval of change—but they expect education to adapt as they have had to do. One focus group participant phrased it best: "As a business, we have to do more with less. It is not an option to do less with less. We have to prove it to the customer. I guess I don't see that same kind of demonstration or thought process that, in education, this philosophy is important."

Perhaps most significant, businesses *want* to reach out to education. Nearly every participating firm provided specific ways in which their business can build new links between school and work. Employers know they must play a role. The mismatch between what is taught and what is needed cannot be realigned in a vacuum, and successful partnership models exist to light the way. Many businesses have already implemented a variety of school-to-work programs designed to strengthen their human capital. This early success, and the belief that human resource challenges will continue to plague the ability of businesses to grow and adapt, is driving a desire to build new programs which will bolster the connections between education and the workplace, and bring school-to-work opportunities to a meaningful scale in Oregon.

Somewhere kids have to learn that getting a degree means nothing if they don't know how it connects with where they want to go. Maybe it has to start in high school, but kids have to be shown what there is out there and what it takes to get there. In the '60s you could get a degree and go out and get a lot of different jobs. You can't do that today. Without experience, a college degree has no value in a lot of jobs here except to start at entry level.

Focus Group Participant

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Deciphering Change: A New Workplace For The New Economy

Introduction

The Oregon Business Council sponsored a series of focus groups with OBC member companies and high technology firms from the American Electronics Association. Thirty-three focus groups were held during the winter of 1995 and the spring of 1996. The purpose of the project was to learn more about the hiring strategies and challenges facing Oregon employers, and to provide a forum to discuss policy changes that would give Oregon businesses a significant competitive advantage.

This report is a sketch of what was learned. During each two-hour session, human resource managers, line managers and other knowledgeable staff met to discuss issues important to their company. The 33 participating firms represent many segments of the Oregon economy including manufacturing, high technology, financial services, health care, retail sales, utilities, forest products, agribusiness and professional services. Although the state's employers are as unique and varied as the Oregon landscape, central themes emerged which provide the basis for the analysis presented here. The Oregon Business Council hopes to meet with additional OBC member companies to discuss these topics, in order to expand its growing understanding of the relationship between workforce and competitiveness.

Human capital is the *most* important factor for business success

In a series of 33 focus groups with some of Oregon's largest and most successful firms, business representatives said that workers are the key to competitiveness. In phrases describing the workforce as *critical to quality* and *essential for growth*, employers expressed the growing importance of skilled workers who are able and willing to continue to learn.

From retail sales to health care, from financial services to manufacturing, Oregon's businesses are grappling with

We'll fail if the workforce is not flexible and adaptable; i.e., able to change on a continuous basis. The jobs we have today are likely to change every few weeks or months. Half the workforce will change jobs every five years.

Focus Group Participant

From The Focus Groups

How important is workforce quality to your company's success?

- *The workforce is all we have. Without good people, we can't compete.*
- *People are our most important asset.*
- *Without good people we would not be in business.*
- *Our product is our people—their time and what they can do. We don't manufacture a widget, we sell people's time.*
- *My staff is my greatest asset.*
- *Our people are our only asset. Salaries are 60% of our operating expenses. We create intellectual property. It's in the heads of the people here, so every time we lose someone, we lose a piece of our intellectual property.*
- *It's critical. We're doing more with less. There is not one position today with the same responsibilities it had as recently as two years ago.*

monumental change in the marketplace—change that is causing employers to reengineer themselves on an all too frequent basis. Technology is the driving force. Today's emphasis on market fragmentation, quality, and innovation mean that workers must adapt to changing rules and even new playing fields.

Product development cycles are short, tolerances are tight and growing tighter, and Oregonians face worldwide competition.

Changes in the marketplace are increasing the demands on all kinds of workers

The global marketplace has upped the ante for worker skills at all levels. Computers used to be the tools of engineers and mathematicians. Most of today's employees either use one or rely on one for a growing part of their work day. Nurses enter patient information and send prescription instructions to the pharmacy; retail clerks process sales at terminals which keep track of inventory and pricing; meter readers enter household energy use information electronically and transmit the data to billing departments. Oregon's employers, large and small, are finding it more and more difficult to hire and keep the kinds of workers they need to stay competitive. As knowledge workers have grown in number and importance, businesses find that their workforce is now more important than equipment and machinery which, as technology perpetuates, has an increasingly short life span. As equipment, processes and products change, workers find that their skills also become obsolete. More than half of the businesses participating in the focus groups mentioned that the ability to quickly adapt to changing demands was an important skill.

Technical skills aren't enough

In addition to flexibility and tolerance for change, today's workers need a package of skills some employers call *work readiness.* Oregon's businesses provided a fascinating portrait of the combination of skills workers need to succeed and contribute to successful companies. What is remarkable is the consistency of this portrait across industries and employers. These qualities emerged not from surveys, but rather from open-ended focus group discussions.

- 28 of the 33 companies (85 percent) stated that *interpersonal skills* are very important. The ability to communicate, work in groups and relate well to fellow employees is becoming more important as hierarchies flatten and teams of workers take on more responsibility for quality, design and delivery.

- A *customer-service* focus ranked second at 70 percent. Service companies were predictably included here, but the 23 companies mentioning customer service also included a significant share of manufacturing and high technology businesses.

In information services, we screen hundreds of resumes and interview quite a few people, and we still don't get the people we want. Most of the time the problem is communication skills and how to interact with others. They can't just be a computer nerd.

Focus Group Participant

- The need for *problem solving* skills was mentioned by 22 companies (67 percent).
- *Computer skills* and specific technical knowledge were mentioned by about 65 percent of the companies.
- 9 companies stated that *presentation skills* are important, 8 specifically stated that basic *math* was needed, and a number of employers also mentioned *writing.* The discussion around these issues centered on the lack of skills new workers have in these areas, and the amount of internal and external training companies do to boost worker skills in these areas.

When discussing how new entrants to the labor force differ from those five or ten years ago, participants stated that more workers were coming to them with computer skills, and that good training was available to upgrade workers' computer skills. Employers implied that Oregon's schools have gotten the message—computer skills are now considered basic—and, although the system is not perfect, employers are encouraged. However, many employers are frustrated that so many workers came to them with dismally poor interpersonal skills and no customer-service focus. A number of companies also discussed the lack of a work ethic in young and unemployed people. A manager from one of Oregon's financial institutions stated, "There has been an increasing problem finding people entering the workforce with a good work ethic. More people than before are casual about showing up on time, not wanting to work overtime to get a job done on a deadline. This is a problem because the organization is leaner. There are fewer people to do the amount of work than there used to be, so people have to depend on each other more."

> *One of the biggest problems we see with our employees is writing skills. They can't keep a log book, so we train them. We're willing to fill in skill deficiencies as long as people have a good work ethic. You can teach skills; you can't teach attitude.*
>
> *Focus Group Participant*

Today's employees, from entry level workers to managers, need this complete package of skills to be high performance workers in a high performance work environment. Many employers stated that they are hiring fewer inexperienced workers to avoid bringing them up to speed in the realities of the workplace. On the other hand, a significant number of employers expressed the desire to hire more new graduates from both high schools and higher education if only problem solving, teamwork, communication and customer service skills were included in classroom or work-related education. Many also suggested that internships or other work experience be added to requirements for graduation, in order to expose young people to the importance of showing up on time, studying in school and having a professional attitude.

Human resource challenges are limiting growth and profitability in Oregon

Perhaps one focus group participant put it best: "Time to market is everything, and people are the gating item. It is averaging five to six months to fill some openings. There are some positions where we just can't find the right skills or combination of skills and experience. The general lack of a pool to draw from makes it very difficult." Oregon's employers are spending vast amounts on recruiting, relocating and training workers, and these investments don't guarantee an adequate workforce. Service industries have trouble with turnover as well as entry level workers who are undependable, have unrealistic expectations, and often can't absorb the information they need to move out of entry level

positions. High technology and manufacturing companies raid each other's engineers and technicians, creating bidding wars and instability.

Labor shortages are threatening the competitiveness of Oregon firms

Oregon's employers are having trouble finding the qualified workers they need, and more and more businesses are being forced to look outside the state, even if they want to hire Oregonians. An analysis of the problem must cover wide territory:

- Not enough young people—especially women and minorities—are pursuing high paying careers in science, engineering and information systems.
- Too few technical training programs (and, employers say, often the wrong kinds of programs) are in place at community colleges to prepare technicians for the growing opportunities in a variety of industries.
- A national shortage of training slots exists for some disciplines, including physical therapists.
- Colleges and universities are still turning out engineers in traditional disciplines, like chemical engineering and electrical engineering, when new technology is demanding that engineers have a broader base of cross-disciplinary skills and exposure to entirely new disciplines.

Some jobs, like pharmacists and certain licensed technicians, are caught in a *Catch 22*. Jobs remain unfilled for long periods because there aren't enough *experienced* workers nor enough intern opportunities for students to gain experience prior to graduating. Citing the case of technicians in a materials testing lab, one focus group participant stated, "You have to have experience (to get certified), but you can't get the experience without the credentials. A lot of people have been grandfathered in. It's a problem."

Oregon's employers face recruiting dilemmas

During the 33 focus groups conducted by OBC, participants discussed a range of recruiting challenges caused by the lack of qualified labor. Companies were asked to rank recruiting difficulties for nine occupational categories. The discussion surrounding these recruiting challenges generated a wealth of information which is presented throughout this report. The analysis looks at broad results across all companies, as well as significant trends or variations within subcategories of employers.

Focus group participants were asked to rank recruiting difficulties on a scale of one to five, where one represented *no trouble* and five represented *great trouble*. Results were tabulated by analyzing the number of responses within a company that ranked a three (*some trouble*) or higher. The charts in this section categorize the results for companies based upon the majority opinion of responding managers within a single company. (See the *Appendix* for a more complete discussion of analytical methodology.)

About the statistics quoted in this report

The focus groups were designed to provoke meaningful discussion on education and the competitiveness of Oregon firms. They were not meant as an evaluation of schools or programs—rather they provided an opportunity to gather the impressions of people on the front-line of business in Oregon. It is useful to analyze the nature and consistency of their remarks: however, the project was not a scientific study.

More than half of the 29 companies responding to this survey question stated that they experience some to great difficulty recruiting in four job categories: technicians (83 percent), professionals (72 percent), managers (66 percent) and sales (52 percent). Overall, Oregon's employers are having the greatest difficulty recruiting technicians. Twenty-four of 29 employers across industries (83 percent) are experiencing difficulty finding qualified technicians.

The implications are staggering. Employers stated that these technical jobs pay anywhere from $12 to $21 per hour, with an average wage of somewhere around $15 an hour. Where community college training programs exist, employers are hiring graduates as rapidly as they can, but many must look outside of Oregon to keep up with job openings. Focus group participants spoke in detail about the shortages of skilled technicians.

From high tech employers:

> *To date, the supply of technicians has been inadequate to meet our needs and we've had to recruit nationally. This was unheard of five years ago; usually we could draw a 50-mile radius and assume it could provide an adequate workforce. Texas, Arizona and New Mexico are also booming (probably 15 to 20 new sites), so it's a national problem.*

From financial services:

> *We're having trouble finding technicians, many of them for good paying, skilled jobs. This affects our ability to handle work load and be competitive.*

Technician shortages have spawned action, and there *are* success stories. Some companies are working with community colleges and even high schools to design technician training programs to meet specific demands. These efforts are examined in more detail in later sections of this report.

From health care:

> *Community colleges have stepped up in radiology, and they are partnering with us to produce workers with the skills we need. We are on the advisory committees. Two years ago you couldn't get an ultrasound tech. Now community colleges have helped us and we give them work sites, and now we have the technicians we couldn't find before.*

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In addition to asking companies which occupational categories present recruiting difficulties, employers discussed a range of problems dealing with recruiting and labor shortages. Chart 2 lists the issues which were brought up most often during the focus groups. Some of the problems are interesting because they show up across several business categories, and others highlight issues faced by particular industries. For example, five of the eight employers mentioning that other companies raid their best workers are high tech companies. All seven companies frustrated by high turnover hire a lot of service workers. Employers who stated that not enough workers apply for positions include fast-growing high tech companies where large numbers of jobs are posted in short periods; employers of service workers who create frequent openings through turnover; and health care providers where specialty nursing positions, technicians, pharmacists and therapists are in short supply.

We need more advanced degrees customized to the job requirements in the marketplace. In particular, Oregon needs a publicly funded physical therapy program. There is none in Oregon. We have to recruit nationally for physical therapists.

Focus Group Participant

Given all of these recruiting challenges, it is not surprising that Oregon's largest employers are looking beyond state borders to recruit engineers, professionals and managers. Twenty-three of the 29 companies responding to this survey question stated that they look both inside and outside the state to find professionals. The practice is not confined to these highest paid occupations, however. Twenty-eight percent of companies said they look both inside and outside of Oregon for technicians, 24 percent do for openings in sales, and 8 percent have begun out-of-state recruiting for construction/maintenance workers, and operators/laborers. Sales occupations had the highest level of purely out-of-state recruiting at ten percent of responding companies.

Chart 1:
Recruiting Challenges Exist Across Occupations

Survey Question: For which categories, if any, are you having trouble finding qualified applicants?

Methodology: The chart reflects the number of companies where a majority of focus group participants within a single company agreed that they had *some* to *great* trouble finding qualified applicants for each occupation group. Twenty-nine companies supplied survey responses to this question.

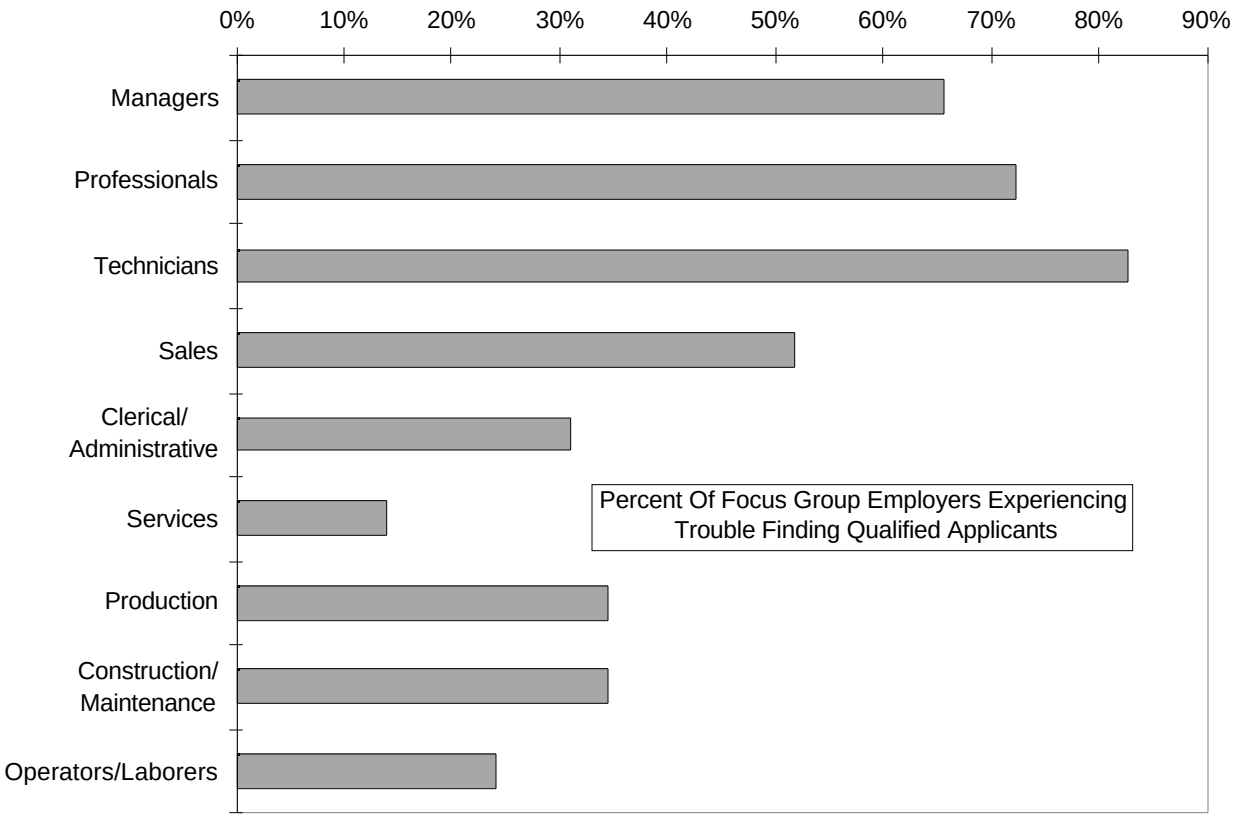


Chart 2:
Employers Face High Costs For Recruiting And Retention

Methodology: These results are based on an analysis of issues which came up spontaneously in focus group discussions. Percentages reflect the number of companies (out of a possible 33) that mentioned the problem. Not all companies discussed these issues, and the percentages would probably be higher if the statements had been formally queried.

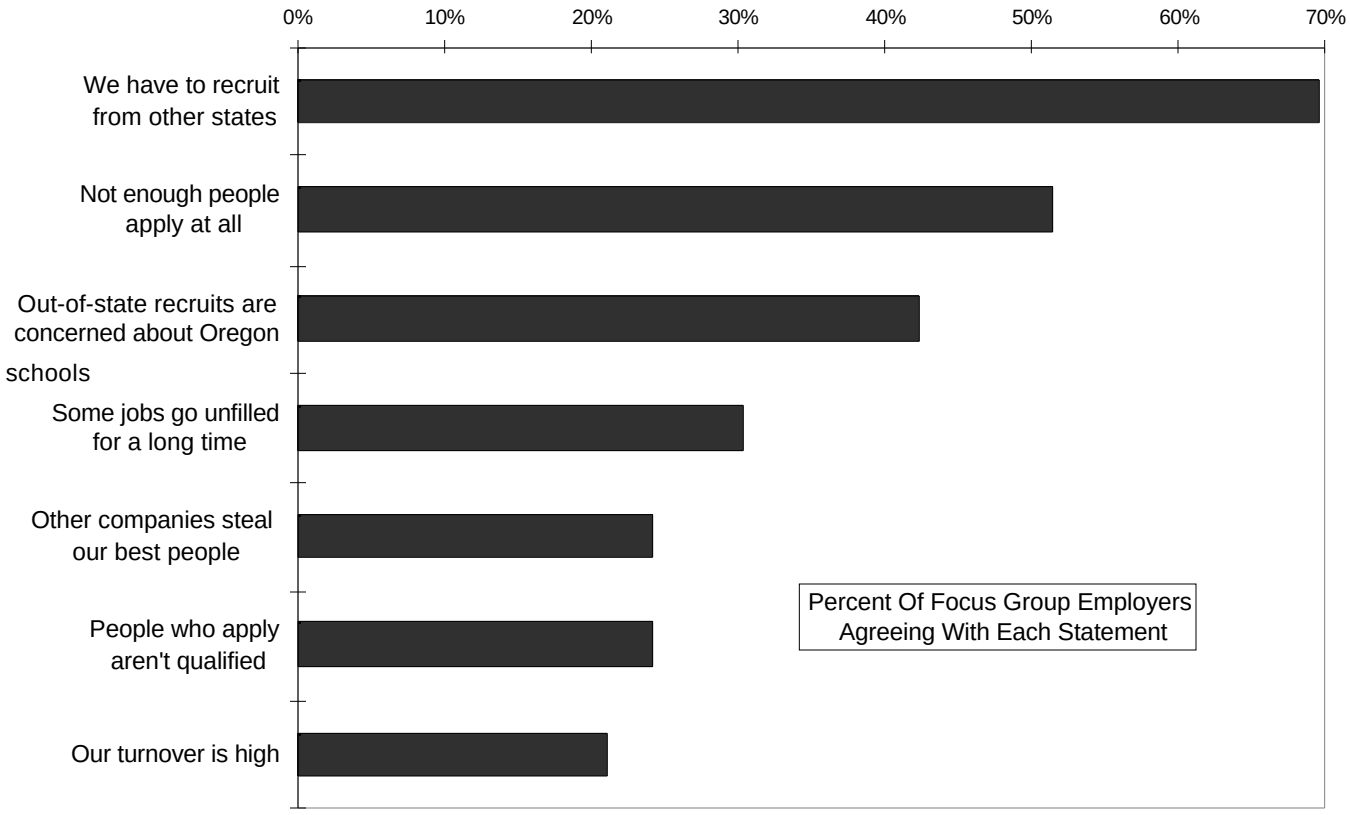
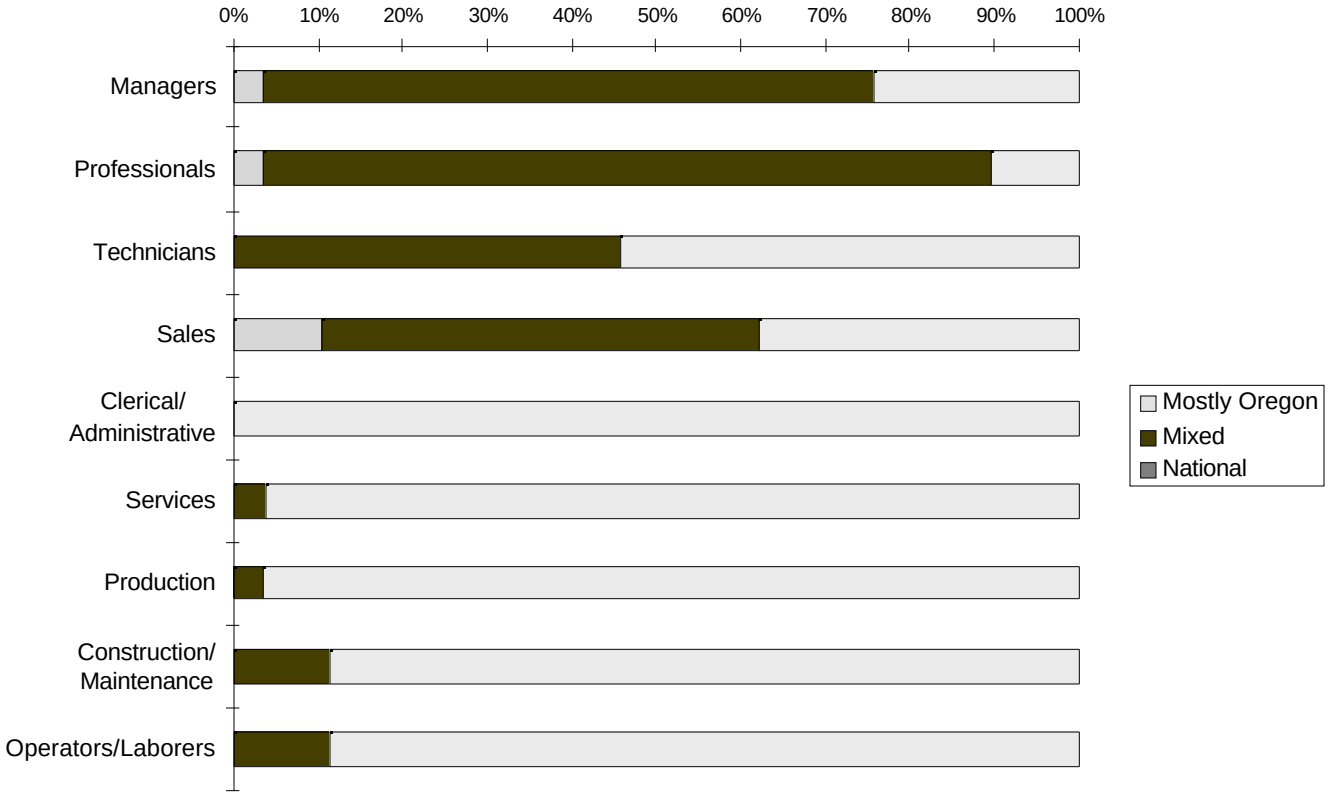


Chart 3:
Employers Look Beyond Oregon For Many Workers

Survey Question: To what degree do you look for resident Oregonians to fill positions? To what degree do you seek talent from a national or international pool?

Methodology: The chart illustrates how companies generally recruit for each occupation category: mostly national recruiting, mostly within Oregon, or a mix of both.



Recruiting Patterns For Each Occupation

Coming To Terms With The Workforce Challenge:
The Mismatch Between Education And The Need For Skilled Workers

Old assumptions about the school-to-career transition are no longer valid

Only a generation ago, people with only a high school education could expect to find jobs which could support a family and offer security for a lifetime of employment. Workers either entered the job market soon after graduation, or obtained further training through the military, apprenticeships, community colleges or four-year schools. Few occupations required workers to go back to school once their career years had begun, and it was not uncommon to work for the same employer for decades. This model is illustrated in Chart 4, *Yesterday*, on page 13.

Today, nearly all of these assumptions are wrong. Workers are more likely to move from job to job, and employer to employer. It is becoming more difficult for people with no training beyond a high school diploma to obtain family wage jobs with an established path for advancement, and many more jobs require continued learning beyond traditional school years.

Many young people flounder in their teens and twenties

There is often a gap between high school and getting onto a career track. Sometimes this gap reflects short-term, low wage jobs prior to a decision to obtain better career-oriented training. Sometimes this gap is a frustrating period of under- or unemployment—even welfare and poverty. One of the reasons for this gap is that high schools have traditionally been focused on those students who go to college after graduation. Many believe that high school vocational training and connections to non-university training have fallen by the wayside. One manufacturing employer stated, "Structurally we have lost sight that we want to give a basic skill set to all of our populace. Kinder-garten through 12 has been taken over strictly on an academic basis: the target is go to college, and as a result

Education is a lot like health reform. We have faced absolute systemic redirection in the way we do business. Higher ed is the last bastion of a system built on antiquated ways of providing services which are not responsive to the community. We have had to face these issues. Higher ed is completely resistant to that. I think it needs to be revamped.

Focus Group Participant

Selected Survey Results

Question:

The quality of K through 12 education is important to our company's success because:

Responses:

- Many of our employees attended Oregon schools - 90%
- School quality is a critical recruiting issue - 83%
- School quality affects the incomes and buying power of our customers - 72%
- We hire technically trained workers from high schools and community colleges - 69%

We hire directly from:

- Oregon high schools - 24%
- Community colleges for AA degrees - 48%
- Community colleges for technical degrees - 52%
- Colleges or universities for BA degrees - 62%
- Colleges or universities for BS degrees - 69%
- Graduate schools of engineering - 38%
- Graduate schools of business - 28%

we have a whole segment of our population which used to be offered manual arts like auto shop and welding which are no longer available. My son went to school in Eugene. There were 1,700 students in his high school. There was a full wood shop, an auto shop and lots of machinery. The rooms are locked and there are no classes offered."

This gap has serious repercussions—for young people, businesses who need more skilled workers, and society as a whole. As one focus group participant put it, "There is a wasteland between 16 and 28 or 29." Another employer phrased it this way: "We don't take a path in education that relates with 'What am I going to do with my life?' This should not happen at 35, not at 28. We are talking culture shift here, but that is some of what we need to teach." See Chart 4, *Today*, on 14.

Knitting together school years and career years to reduce this gap is what school-to-work is all about. In Oregon, education reform is being designed to help resolve the mismatch between what schools teach and what workers need to know. Much progress is being made, but isolated success stories will not be enough to get most young people connected with productive careers or solve many of the workforce challenges Oregon businesses are facing today. Business and education must work together to build a new system which raises standards for all students and acknowledges the need for ongoing education. One of Oregon's high technology firms explained his vision of what is needed. "You have to build up the base and then re-educate the base. You have to supply the product and then service it."

Chart 4
School-To-Work Model

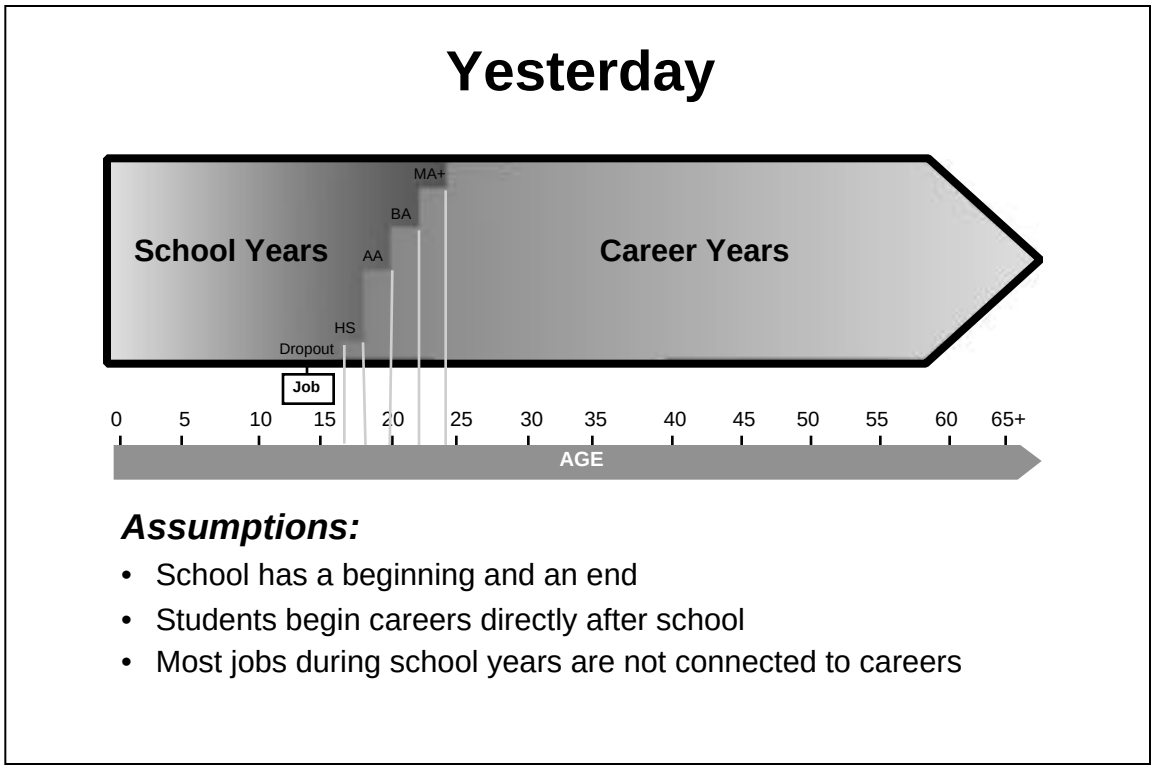


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Chart 4
School-To-Work Model

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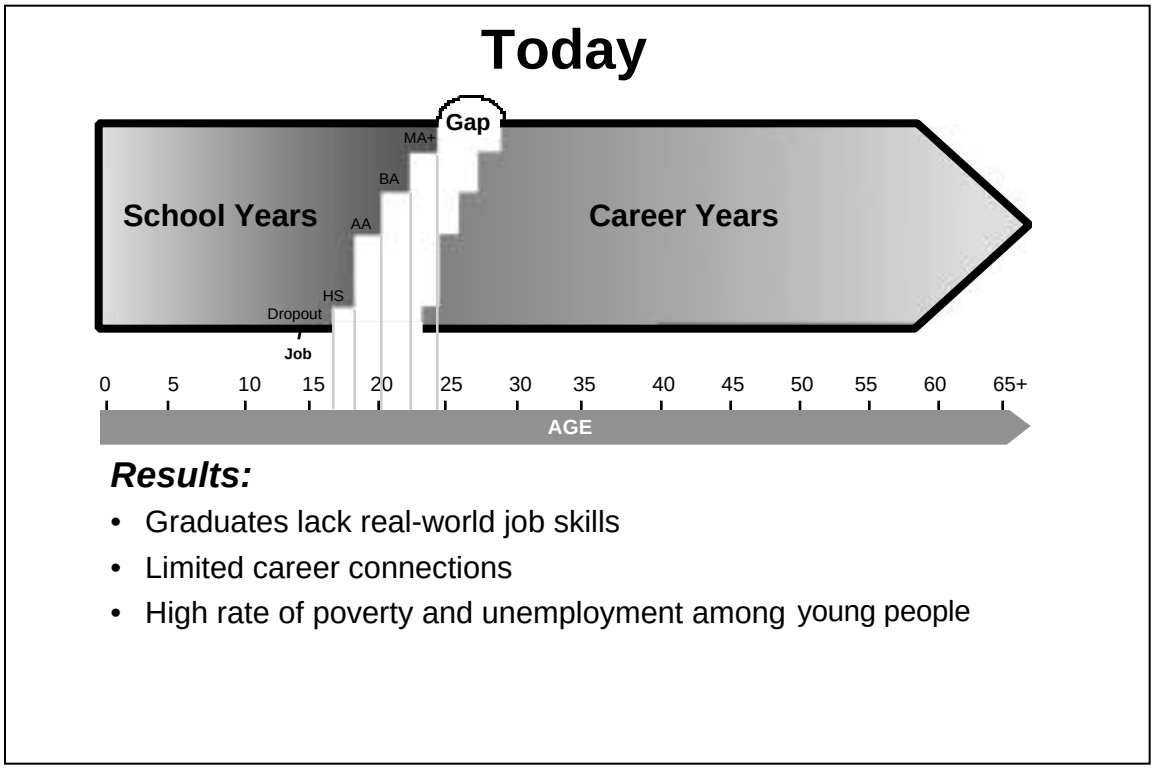


Results:

- Graduates lack real-world job skills
- Limited career connections
- High rate of poverty and unemployment among young people

Business sees education as a workforce partner that is not yet doing its share

Indeed, most are quick to say that education is a big part of the problem. A common sentiment is that education—and higher ed in particular—resists change and lacks a customer-service focus. This frustration is tempered by bright spots—partnerships and pilot projects which have garnered positive results for both business and workers.

Education institutions should stop thinking of themselves as buildings where things take place. Instead they should see themselves as learning programs that can take place anywhere.

Focus Group Participant

Businesses know they face tough workforce challenges, and they are eager to find solutions. Employers believe that Oregon's high schools, community colleges, and four-year colleges and universities should be the first place to look. But they are spending ever-larger amounts on proprietary training, combating what they see as a tremendous shortage of continuing education opportunities and a system that sends unprepared graduates to their doors. Focus group participants shared board room sentiment:

> *OSU give you basics: strength of materials, statics, dynamics. That's a start, but we need injection molding seminars, new materials seminars. You can't get this in a traditional university. The proprietary market is picking up a big share of the education in this area.*

> *If the universities don't give us people who can be stars, we are in difficulty. They keep sending us accountants and financial types, and what we need is people with sales, presentation, and communication skills, such as drama students. Our market has changed a thousand percent in the last few years, but there are people in academia who haven't kept up with that. Neither the professors or the students understand what the banking world is like. They are both surprised to find out that people here have to sell and be accountable. People don't sit behind a big desk anymore. Some work in a 400-square-foot space and circulate up and down grocery isles to give people a coupon for free checking.*

> *The universities are typically out of sequence with industry.*

> *We don't see much skill difference between the people we hire with only high school diplomas and the people we hire with college degrees. There is no difference, for example, in spelling skills. People with college degrees tend to have more professional behavior, but this may be just because they are older.*

Business needs education as a strong partner to provide graduates who are ready to go to work and make a contribution. Business also needs schools to provide continuing education as the workforce requires ongoing training. In both of these categories, focus group participants expressed frustration and outlined specific problem areas.

The leaders of the technology department must have their activities aligned with the technology that is in the real world. So often I see the schools of computer science, or even engineering, have a curriculum based on the technology of twenty years ago. I expect higher ed to be pulling me into the technology of the future, but they are the anchors.

Focus Group Participant

Oregon's education system is not producing enough work-ready graduates

This report has already documented shortages of skilled workers for some kinds of jobs, and this topic is explored in more detail in relation to specific occupations in the occupation profiles located in the *Appendix*. It has also presented evidence that Oregon employers believe there is a serious mismatch between what is being taught in school, and the skills workers actually need to be productive on the job. This mismatch relates to both the quality and quantity of skills.

Employers believe that quality standards need to be higher at all levels, Kindergarten through graduate school. Focus groups stated that these high standards should include the traditional basics—reading, writing, math—plus contemporary basics like computer keyboarding and spreadsheets. At a focus group for a financial services firm, one manager said, "I teach business writing and I've seen a dramatic change in the ability to express oneself orally or on paper. We have high standards and the people coming in aren't meeting them, so the class is very popular. They say, 'I wish I would've learned this in grade school.'"

An overwhelming majority also believe that the foundation needs to be broadened to include work readiness—teamwork and other interpersonal skills, problem solving skills and a customer-service focus. Employers also consider work readiness to mean that young people are prepared to cope with the realities of the workplace, like the need to show up on time and demonstrate a positive attitude. A financial services employer said, "We are also finding that a lot of people lack basic interpersonal and presentation skills—for example, the ability to shake hands and look someone in the eye—and they are unwilling to work a full schedule. Some say they want to wear jeans and work only certain hours." These complaints were leveled at both high school graduates and those with higher ed degrees.

The following statistics are compiled from an analysis of spontaneous comments made about education during the focus groups (as a percentage of the total of 33 companies). If all focus groups had been queried on these statements, the results would no doubt be even stronger.

About education:

- 24 companies (73 percent) stated that the traditional K through 12 system does not teach the skills today's workers need.
- The same number, although a different mix, believe that higher education is similarly out of touch with current skill needs.

- 23 companies (70 percent) think that education has not kept up with general change and 15 companies (45 percent) expressed that schools have not kept up with technological change.
- 14 companies (42 percent) said K through 12 isn't as good as it used to be.
- 14 companies said that higher ed lacks a customer-service philosophy or does not listen to their needs.
- 12 companies (36 percent) specifically stated that high schools or colleges have low standards for graduation.

In addition, many manufacturers and high tech employers are concerned that not enough woman and minority students are being encouraged to pursue careers in science or manufacturing. Employers are being forced to recruit outside the state, when most would prefer to hire Oregonians for these well-paid jobs. "There is a tremendous raw material problem. I did a seminar at PSU and there were only three or four out of twenty people in this seminar that were US nationals. There is a tremendous problem in bringing our people up through the system to get hooked up with the sciences. The root cause goes deeper than higher ed. It is a nationwide problem...even in grade school. If higher ed is good, it still can't solve the problem if people don't go into science and engineering."

If you look back 20 or 40 years ago when we went on field trips, we would go to the fire station and then everybody would want to be a fireman. We need to expose our kids to a broader array of jobs. It would help them make decisions to get exposure at an early age.

Focus Group Participant

Manufacturers also believe that young people are not being exposed to the benefits of a career working with their hands. A sample of comments from focus group participants outlines the issues:

> *They don't realize what we have to offer. They aren't taught what manufacturing is and where they could end up. The teachers haven't been exposed either, so how can they hear it from a teacher?*

> *We want education to remember that somebody still has to make everything. It is not just the information age. Sometimes we feel like they are leaving us behind.*

> *In the high school it was career information day. The manufacturing one was canceled due to lack of interest. The year before there were three kids. The schools are telling kids it is the information age. Yet the majority of students who graduate from the high school will end up at our front door.*

Clearly, Oregon employers would benefit from education improvements which lead to work readiness, a better alignment between what is taught in school and what is needed on the job, and a better relationship between the supply of students in some specialties and employer demand.

Oregon's education system is not offering enough high quality, accessible continuing education

If young people were graduating from high schools and institutions of higher education with better basic and work readiness skills, and in more of the needed career areas, businesses agree they would have tremendous competitive advantage. But that is not the complete story. Continuing education is also critical to remaining productive and profitable. Change is the *only* certainty, and workers must continue to adapt and learn new skills. This is true across industries, but it's especially applicable to high tech employers. "Our technology is obsolete every three years. The whole industry is only 15 years old, and it's probably renovated itself half a dozen times. One of the implications of this is that ten years out of school people are doing something completely different than what they were trained for."

Employers' views of specific weaknesses in continuing education are spelled out in more detail in the occupation profiles section of this report. Managers queried during the focus groups stated that continuing education is particularly important for engineers and technology workers, and for professionals and experienced workers moving into management jobs. Continuing education is also an important factor in recruiting and retention. Basically, businesses want better access, broader choices and improved quality.

> *Part of being a professional in today's workforce is continuing to learn, so access to education is critical.*
>
> *Focus Group Participant*

From the focus groups:

> *The big need is continuing education. When we search for a manager, not many have those skills, so the next big issue is if we have someone who can take advantage of a continuing ed program—they will probably get the job.*

> *Boston has succeeded because there are 120 colleges there. So continuing education can have a broad impact on the economy.*

> *When we're recruiting, people ask us how good the colleges and universities are here, because they are interested in being able to continue learning. People want to be in a place where they can be with people at their own educational level.*

From the continuing ed programs, we need a more service-oriented attitude, a willingness to find out what we need and to put it together in a way that works for us. Consultants do this and that's why we use them for continuing education. If people in higher ed did this, we would use them.

Basics are needed as a foundation for adult life—it is imperative they have these basic tools, plus an ability for lifelong learning which is needed due to the magnitude of change anticipated.

During the 33 focus group sessions, employers offered examples of how education has let them down, as well as the kinds of training that is filling the gap. Again, most of these statistics reflect the number of companies making spontaneous comments with a similar theme.

About continuing education:

- 30 companies (91 percent of 33 companies) take advantage of proprietary training courses using consultants, packaged videos, seminars or other training to help upgrade the skills of their existing workers.
- Many of these same companies say they wish they could make better use of Oregon's community colleges and universities for this type of training, but they can't find what they need.
- 29 companies (88 percent of 33) stated that they desire better access to continuing education.
- 23 companies (79 percent of 29) said that higher ed is important to their success because they rely on colleges and universities for continuing education.
- 23 companies (70 percent of 33) wish their employees could take advantage of flexible programs balancing school *and* work.
- 22 companies said that access to higher ed is a key quality-of-life issue for employees (76 percent of 29).
- 19 companies (58 percent of 33) don't believe that current continuing education programs offer the kinds of training programs they need.
- 10 companies (30 percent of 33) expressed the desire to have more distance learning possibilities.

High school has been so focused on college prep that we've failed to recognize the 70 percent who don't go to college, and we turn out people who are ill prepared to cope with life. The absence of basic skills shows we're not turning out people capable of coping.

Focus Group Participant

Most current responses to workforce problems are agonizingly short term

Employers are responding to these issues in a variety of creative ways, but many of these responses will not solve the problems in the long run. It is fortunate that Oregon is a desirable location. The quality of life here has made it easier for Oregon employers to avoid some of the hiring problems faced by other states. Nurses, for example, are in short supply in many parts of the country, but Oregon enjoys an ample amount of nurses, thanks to local nursing schools and the willingness of out-of-state nurses to relocate here.

> *You can find the skill set, but we are fighting with our neighbors. We are hurting the economy by stealing from each other and not solving the net problem.*
>
> *Focus Group Participant*

Corporate raiding and out-of-state recruiting are driving up labor costs

Many high tech businesses and other employers of workers in short supply have had to resort to luring needed employees out of other firms. Often this means paying higher salaries and relocation fees, and there are no guarantees that the prize will be won for long. This affects employers of engineers, technicians, physical therapists, experienced pharmacists and some nurse specialties, information services specialists, and sales professionals. One Oregon retailer said, "In the info tech group, we can't find employees in Oregon. The best we do is trade among our competitors. All of us have to go outside Oregon." A financial services firm said, "I have an information services team in my area; we can have positions open for months."

Employers are paying large fees to headhunters and even other employees for referrals, while some relevant training programs sit half empty because they have not marketed themselves well enough, or potential students are not attracted to the work. As already stated, businesses are frustrated by the small number of woman and minority students going into manufacturing and the sciences. The occupation profile of operators and production workers (located in the *Appendix*) demonstrates employers' concern that education is not exposing young people to the opportunities available in manufacturing. Yet the discussion groups frequently generated versions of the story of the college graduate sweeping floors because he or she could not find work in his or her chosen discipline. Over time, the only way to resolve these shortages is to improve the match between education supply—trained students graduating from the system—and the actual demand for workers within individual occupations.

Oregon employers, grappling with the training gap, are rethinking hiring policy and career paths

Employers have responded to labor shortages in a variety of ways: by developing in-house training programs using employees as trainers, paying for proprietary courses and consultants, customizing community college courses, sponsoring continuing education provided by four-year schools, or any combination of these options. Many of these efforts are successful and affirm the benefit of creating connections between school and work. However, a surprisingly large number of employers stated that they have curtailed or even discontinued training programs they once had. The reasons are varied, but one of the most

important is the need to focus productive workers' time on getting goods and services out the door.

From the focus groups:

> *If there's a job opening, it means we need someone fast and we don't have anyone in house, so we don't have the luxury of training them. They need to be able to do the job day one, so we tend to hire people with experience, either from inside or outside.*

> *Our managers are spending so much time trying to find people, we don't have time to bring someone in who is green and try to mentor them.*

> *In service, it's tougher to grow someone into the job. It cuts into your bottom line.*

Another reason employers have changed hiring policy and career paths is that jobs are more complex today, and some workers are unable to absorb training for promotion.

From the focus groups:

> *Previously, employees had to know their own jobs. Now they need to understand the company itself and how it all works together.*

> *Member services used to need great human relations skills, now they need that plus statistics and analysis.*

> *In the past, we used to have people right out of high school working to type or answer the phone, and they could be brought along to do customer service work. Now, unless they come with some knowledge of the marketplace and business skills, entry level workers can't make the leap into the more professional positions.*

> *We have studied this. Workers can't make the transition between starting in entry level and making it to the next level, like claims.*

Many employers do promote managers from within, but focus group participants explained the growing importance of accessible, high quality continuing education to help good employees become good managers:

> *Managers are hired primarily from within the ranks, but we have gone outside more and more to management training programs.*

> *Some health professionals become managers, but there aren't career paths here from one category to another. Upward movement depends on acquiring additional formal education.*

> *It's hard to see why more universities don't get into the market of servicing professionals in short, specialized courses. Before they can do that, though, they're going to have to use people with real professional experience, not Ph.D.s who haven't been in the trenches. Universities can do this in that niche where they*

> *charge $500 per student rather than the $1,800 charged by private seminar services. If Oregon schools were in that niche, we'd send 20 people in a heartbeat.*

Employers are working to create new career paths to respond to change. In many cases, employers are transitioning from one strategy to another, trying to stay one step ahead of (or more likely catch up with) ongoing change.

Today's hiring and promotion strategies can be grouped into three models.

> *Start Them Young:* Employers hire graduates of high schools, colleges and universities and provide in-house training in specific technical areas. Many firms sponsor continuing education to allow workers to obtain new technical skills or to train them for supervisory or management positions. This model emphasizes the importance of acclimating young minds to a specific corporate culture. Many managers are workers who have been promoted from within.
>
> *Seek Experience:* Companies hire experienced workers for all positions, entry level and above. They generally offer a combination of continuing education from colleges and universities, as well as specific proprietary training to help their workers keep up with changing technology. Basic skills training or traditional on-the-job training are not emphasized. Managers may be promoted from within, but more often are brought in from outside companies.
>
> *Grow Your Own:* Businesses prefer to—or are forced to—provide their own customized training for many positions, often because of the unique nature of the work that they do. Employers gradually increase workers' skill through on-the-job training and outside education. These companies generally start with inexperienced workers and, after training, promote from within. For example, operators may become technicians or even engineers, although this type of career path often requires that workers obtain a degree, part-time, throughout the process. This model emphasizes internships and a flexible work schedule to accommodate all kinds of training.

Focus group participants described their hiring strategies for three specific occupations in detail. These occupation profiles, found in the *Appendix*, focus on technicians, engineers, and operators/production workers.

Drafting A New Chapter: School-To-Work

Business and education must work together to develop solutions for the *long term*

Focus group discussions revealed that Oregon's businesses are facing ongoing and turbulent change, and that a strong workforce is the most important factor for business success. However, employers face a myriad of recruiting problems. Many are developing creative responses to deal with their workforce issues, but most of these responses are short term, at best. What is needed, businesses say, are higher standards at all levels of education, better access to high quality continuing education, and classroom training that is more connected to the needs and realities of the workplace. In other words, resolving the gap that exists between school years and productive career years by weaving together a seamless training system called school-to-work. (See *Tomorrow*, Chart 5, on page 28.)

Some say that it might also be called work-to-school, in that part of the big picture of workforce preparedness includes the ability to train and retrain current workers. Continuing education loops workers back into formal learning, breaking down the walls between school and work. No matter what you call it, better workforce training begins in the early years. Without the proper foundation, Oregonians have a tougher time achieving self-sufficiency and contributing to a successful, competitive economy. This report has presented specific examples of the types of skills today's workers need: teamwork and communication, problem solving, customer service, decision making, and a strong grounding in writing and math. It is also critical that young people understand the work ethic: the need to show up on time, dress appropriately, and pull their weight as part of a team. In the minds of Oregon's employers, if young people are offered more exposure to the world of work, much will be accomplished.

Business and education have to get into each other's camp. The kids have to have exposure to a variety of businesses. Teachers have to understand what the problems of businesses are, and we have to understand teachers. Business leaders have to spend some time in the classroom.

Focus Group Participant

K through 12 needs a school-to-work program with integration of the school and work elements. Minimum competency testing in which students can't get degrees if they can't write a basic business letter and do basic math. This has to start sooner than high school, making sure that kids at the elementary level can read and write.

Focus Group Participant

People I interviewed coming out of the university didn't seem to have a realistic view of the world. They thought they had a complete set of skills, everything that they needed to go to work. They didn't see that they were only at the beginning stage of a long learning process.

Focus Group Participant

From the focus groups:

> *Schools need to introduce work realities into the classroom at an earlier level. Students and teachers have to get connected with the workplace earlier, and they need to see that it is an exciting place. Kids can see there is a real reason to stay in school and study.*
>
> *To me, it gets back to students being able to understand why they are learning certain things and why that's important; why they need good grades and to show up every day, and how that connects to their future.*
>
> *There are so many kids with no direction. If they could focus on making decisions earlier in life so they could get the education they need...*
>
> *Kids must learn responsibility earlier in life. They need to perceive school as their job, just like the jobs mom and dad have.*
>
> *The more you expose people in school to what jobs really are and what they entail—now people are forced to make a choice without any idea of what is required. It is a crime.*

> *Kids need more exposure to what the opportunities and choices are out in the job market. There should be more partnerships with business and more apprenticeships. Kids need more early hands-on experience with work.*
>
> *Focus Group Participant*

Companies see the benefits of creating links to schools

This exposure can be accomplished beginning at a very early age, starting with business tours and guest lecturers, all the way through mentorships and work experience. Several examples of this type of partnership between business and education have been highlighted in this report. The case study on page 43 describes a health services company that is working with elementary schools on career exploration, on up through high schools and community colleges to help develop technicians and other needed medical workers. Two managers from a utility company cited examples of their success: "We as a company are doing a fair amount with individual schools and making a world of difference with a variety of volunteers from the community—not just the business community. Alliances need to be created among teachers, the community, and business. And learning doesn't stop at the 2:30 bell;" and "We've seen some good changes in K through 12 due to business getting into schools more and more, and expressing our needs. For example, in Junior Achievement, we try to address teamwork and lifelong learning."

Employers have also stressed the importance of longer-term work experience, often in the form of internships. And this is not just for students in high schools or community colleges. Focus group participants specifically addressed the need for better business connections to four-year programs.

From the focus groups:

> *community colleges would provide technical training with practical experience, we would hire more students to work here.*

The programs I am really impressed with are summer internships where kids can get out into the field they've chosen.

As I look at my workforce, I am not sure I see much difference in those who have a college background and those who don't. Does it really provide a differential? A lot of students coming out of college have theory but no practical applications. To collapse the program to give them some practical applications would make better use of those four years.

We are bringing a few people in here out of high school and college as interns. This may become another way for us to look at people and let them look at us with low risk.

The problem is the colleges may be teaching specific technical knowledge, but they aren't teaching anything worthwhile about workplace reality.

It would be nice to have intern programs so we could mentor some people here.

One of the things MECOP students do is go back and tell their professors what they need to learn.

Focus Group Participant

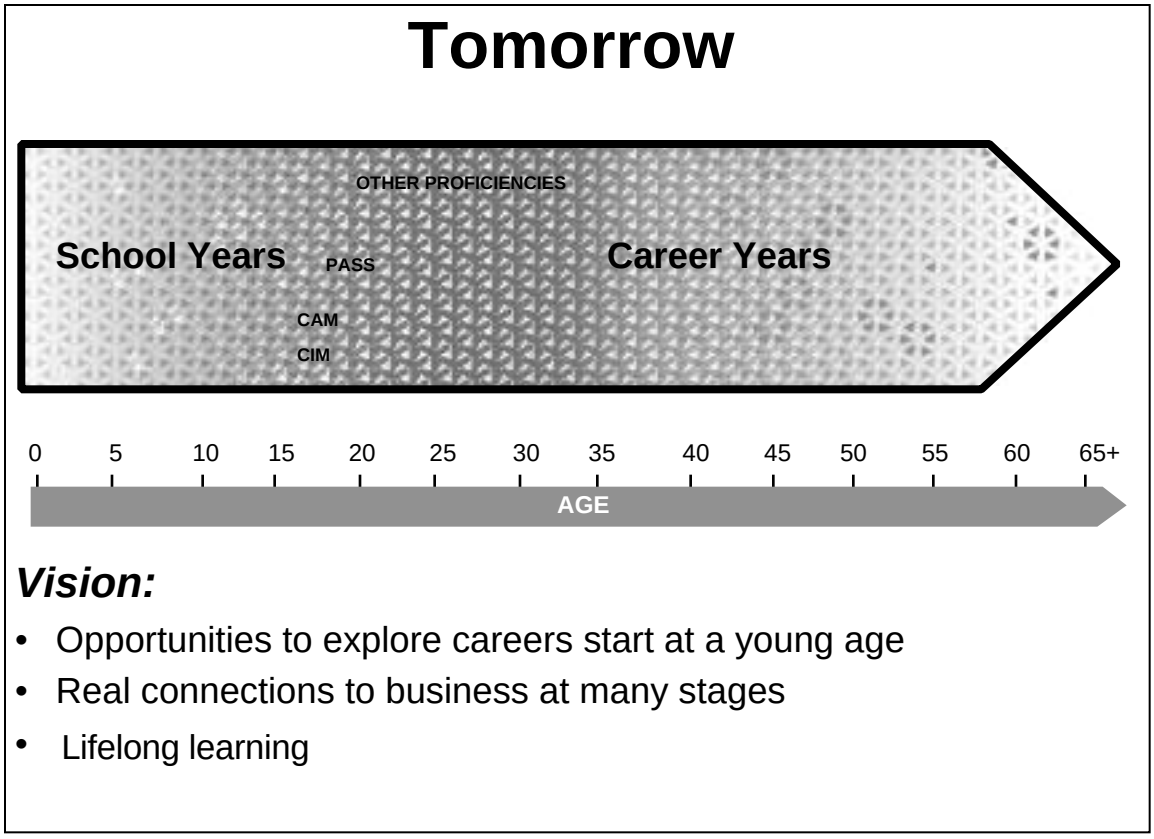
A lack of real world experience costs both businesses and students:

It's a burden on management to deal with entry level, junior people. We'd like to see more internship programs so people coming out of school have had their hands on the kind of work they'll have to do here. Essentially, technical support is our in-house intern program.

In our clean room, we have two people working side by side: one has a GED, the other a degree in chemical engineering. He was having trouble finding a job because he didn't do an internship and didn't have practical experience. The job pays $7 to $8 per hour."

A successful school-to-work strategy essentially blends the best elements of today's hiring models, allowing employers to *Start Them Young*, *Grow Their Own*, and *Seek Experience* at the same time.

Chart 5
School-To-Work Model



Vision:

- Opportunities to explore careers start at a young age
- Real connections to business at many stages
- Lifelong learning

Businesses *want* to reach out to education

Fortunately, Oregon employers have indicated a strong desire to form closer ties with education. Many have already begun the process, and others are forming plans. Focus group participants stated that some are waiting for an invitation, or an indication that their interest will be welcome. Because of the Oregon Education Act For the 21st Century, Oregon's Workforce Quality Committees and public school districts, as well as the innovative involvement of businesses including OBC member companies, successful school-to-work models are springing up in many communities. The challenge now is to bring these efforts to a scale that will benefit more young people and strengthen the workforce of many more Oregon businesses.

There needs to be more cooperation between businesses and the schools, with more managers and educators trading work roles back and forth for the benefit of the students.

Focus Group Participant

These changes do not mean business as usual. One focus group participant phrased it best: "Industry contact with the K through 12 schools should be in the form of an ongoing relationship, not an occasional project involvement. There is a need for some form of partnership." Another employer said, "There needs to be a better path for kids who don't go to college." And, "We are telling kids, 'you will be in school the rest of your life.' They need to understand that learning is not a finite issue, it is a lifelong issue."

One of the ways businesses envision this partnership is a stronger presence in the classroom:

> *Training programs could draw on the expertise from the companies. People could go and teach a course in business and other areas. You don't have to hire an expensive MIT professor. We have a lot of talent here in town. We could team with the universities.*

Bringing teachers into businesses is another big thing—to understand how the business runs and works and what is required, and having people from companies go to school to visit or even teach classes, to tell students how to prepare themselves.

Focus Group Participant

> *Couldn't we get some people from the working world doing the teaching instead of academics? I have learned so much more from teachers who have experience.*

> *Our physicians and other knowledgeable people can't teach or go into the education community to talk about AIDS, etc., because they don't have a teaching certificate. After the kids graduate, then we are asked to do all the teaching. If we could get the school system to let us in to talk about health, first aid, how to take care of yourself, nutrition... We have huge expertise, but unless you have a teaching certificate, you can't go in.*

> *Why not let the banker come and teach people finance?*

It is also important that teachers gain a real-world understanding of employers and the workplace:

> *We need high caliber teaching to prepare students to transition to the workforce and bring them back to learn more later on.*

If the professor has stopped learning, he can't teach.

Do teachers and counselors spend any time at all in a work environment?

Building connections between business and education will strengthen Oregon's labor force and improve the bottom line

Some of the major conclusions of the focus groups bear repeating because they demonstrate that improved connections between business and education will benefit everyone—students who will become workers, businesses who need workers, and communities that depend upon a vibrant, growing economy. More than 200 managers from diverse Oregon businesses reached a unanimous conclusion during the OBC focus groups:

That is why you see the dynamics of the Silicon Valley. It is because the schools and businesses are going hand in hand.

Focus Group Participant

Education affects employee performance and business' ability to hire qualified Oregonians.

In addition, the following values and beliefs were stated or implied by companies during the open-ended discussions (the percentages are based on the number of companies favorably mentioning the issue; the numbers would probably be higher if the statements had been formally queried):

- 30 companies (91 percent) said that K through 12 needs stronger ties to the realities of the workplace and to further training.
- 27 companies (82 percent) said if businesses had a stronger connection to education, there would be a better match between skills taught and skills needed on the job.
- 25 companies (76 percent) said that businesses need more and better opportunities to link with education.
- 25 companies (76 percent) said if students had more work experience as part of school, they would be more productive workers (and about 45 percent said that these workers would be more reliable and adaptable).
- 20 companies (61 percent) said that employees are parents who care about education; it is an issue for both recruiting and retention.
- 17 companies (52 percent) said that students and teachers would have a better understanding of the need for communication and teamwork skills if business had a stronger connection to education.
- 15 companies (45 percent) said that students would see more career options and have a more realistic view of their opportunities if business had a stronger connection to education.

An improved education system would affect our cost of training and recruitment. We'd have a broader base of people to draw from, and we'd benefit on the sales side from a thriving economy.

Focus Group Participant

Obviously, Oregon employers see a bottom-line benefit to improved job preparation. They also see clear costs to failure:

If we do a better job in K through 12, then we will have younger students ready to go to work and make a contribution. What is our focus in the US? We've lost it. Kids today aren't ready to be committed to anything in their early twenties.

The diploma is a useless document. You get it for putting in time and it has nothing to do with a standard. We have to teach young people how to have a transition into adult life. How to communi-cate with adults in a respectful manner so they are not set up to fail.

We're having trouble finding people who can write, including college graduates. It's an increasingly big problem. It's surprising when you interview applicants that have good oral communication skills but can't write. We're starting to screen for this, just asking people to draft a business letter. We don't have the luxury of teaching people how to read and write.

Industry involvement would give kids a better idea of what skills they need to be successful, it might help them develop a better work ethic, and it would create a more informed perception of our industry.

Focus Group Participant

One of the alternatives in our society is to end up in a situation like California. They used to have a system—K through university—that was the envy of the world. In the space of 30 years, they destroyed that. Now they can't build prisons fast enough. Our society will pay one way or another. We need to balance this. We need people trained to run the country and a way to help people into the lifeboat to raise them up.

Successful models exist for school-to-work

The Oregon Business Council is currently engaged in a project to measure the progress of member companies in school-to-work, and to document the types of activities in which member companies are involved. These activities range from donations of equipment and funds to sending employees to the classroom; from sponsored tours and job shadows, to helping set up in-school businesses run by students. To date, twenty companies have supplied information describing their school-to-work activities. Chart 6 highlights the depth and breadth of projects currently underway with OBC member companies.

Launching *Worksite 21*, an innovative school-to-work employer assistance project highlighted in the next section of this report, will help even more employers put school-to-work programs in place. These efforts can alter the face of education in Oregon, and promote deep-seated change in the character of the emerging workforce.

Employer commitment is critical to bringing these efforts to scale. The focus groups have given depth to Oregon's understanding of the importance of the workforce in today's global marketplace, as well as the shortcomings of an education system that has not kept up with the times. These are not simple problems. None of the participants offered solutions to the current funding crisis in education, and none expects that the system can be transformed overnight. But all expressed the belief that we can and should make it better—and they want to help.

Some phrased it simply:

> *Instead of just academics, we should ask, "How does it apply to the real world?"*

And some were much more specific:

> *The schools need to adopt school-to-work programs like those at Roosevelt and David Douglas high schools. The schools need better programs in general for students who are not college bound, especially a focus on better work habits. And students need more awareness about the world of work so they can make more intelligent decisions about what they want to do.*

Case Study: A School-to-Work Success

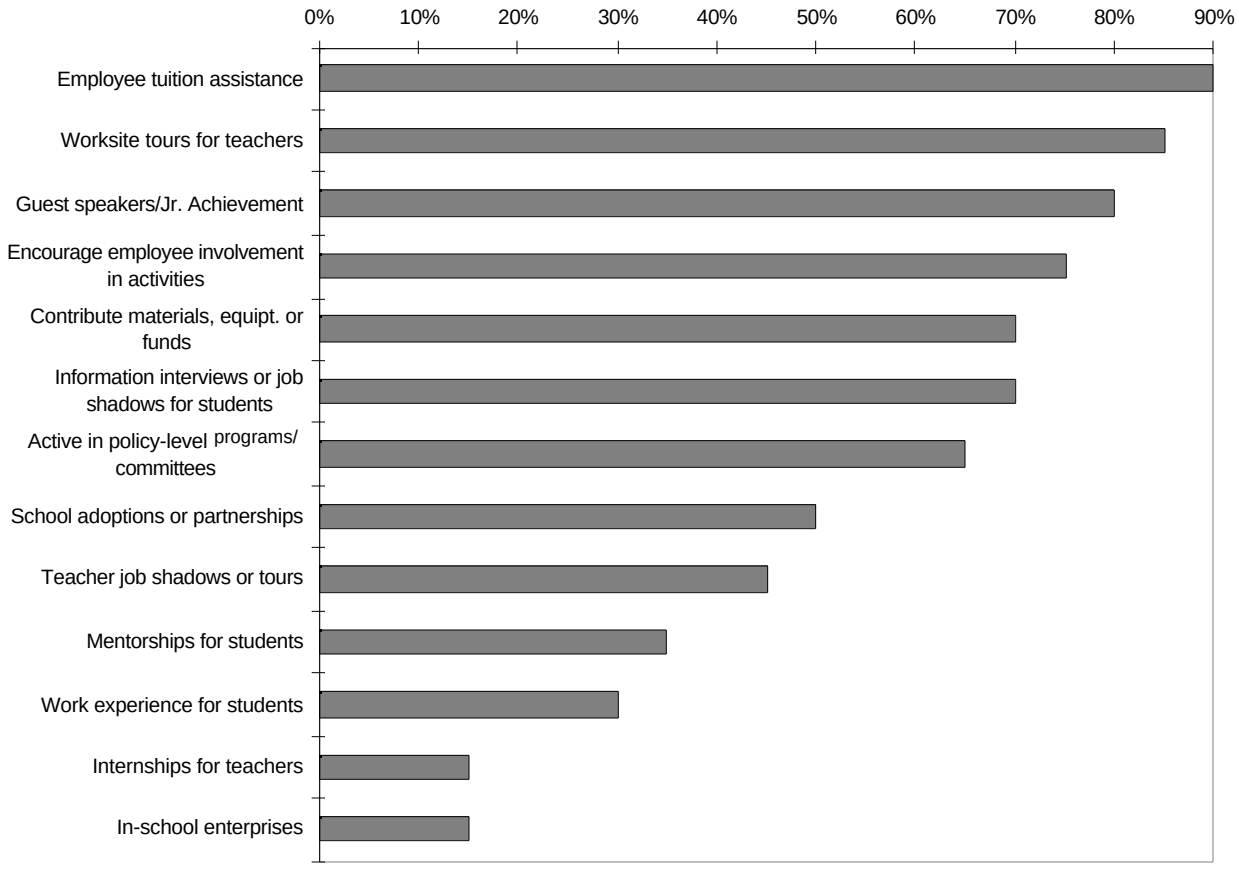
One of Oregon's financial services companies discussed its school-to-work efforts during its focus group. Managers expressed enthusiasm for the students they connect with, and for breaking down the walls between education and business. "For our summer students, as part of the session we asked our president to have lunch with them, and they were thrilled. They asked, 'How did you become president?' and 'What will I have to do to have your job?'"

The employer believes school-to-work will benefit the company as well as the students. "The motivation of the juniors and seniors is to give them a way to make money. If they see there is a hope that you can leave home and pay for your car insurance, and see the opportunity to go into family-wage jobs with a company that gives you a way to go on to the last two years of university, then that is more like the old fashioned view when connections to companies were made earlier and people stayed forever."

"We recently did a school-to-work project with Centennial High School. This is our third year. Their students spend a week here, half-day. Tasks are doing an interview, filling out an application, learning about presentations. A question is also part of the curriculum, and students work on it throughout the week. Then they make a presentation at the end of the week. One student went to marketing, one to information services and another to provider relations. I have noticed that the students are getting more and more astute to business. This year's group fit right in and made wonderful presentations, even with flip charts. They seemed so at ease in our environment. I don't know if it was because of the school-to-work connection, but they were terrific."

Many focus groups ended by asking the participants to describe how big a difference it would make to the competitiveness of their company if Oregon achieved their vision for education and job preparation. There were many inspirational answers that speak to the importance of this mission and its ability to make Oregon businesses more productive, profitable and competitive, but one Oregon employer summed it up by saying, "It would have enormous impact on society as a whole."

Chart 6
OBC-Member Companies Support School-To-Work



Percentage of Companies Active In Each Category

(20 Companies Reporting)

Expanding The Audience: Marketing *Worksite 21*

The mission of the Oregon Business Council is to contribute to Oregon's long-term social and economic well being. Because of the linkage between education, workforce quality, economic competitiveness, and social cohesion, OBC has identified K through 12 and higher education as high priorities for involvement and policy direction. In particular, OBC is involved in supporting implementation of the Oregon Education Act.

Oregon *Worksite 21* is new technical assistance consulting initiative of the Oregon Business Council. Supported by foundation funds, *Worksite 21* is designed to promote and assist employer involvement in school-to-work. *Worksite 21* will show employers how to accommodate students on the job site in a way that makes the experience manageable for the employer and safe and meaningful for the student.

The emphasis of *Worksite 21* will be:

- Building infrastructure on the employer side of the school-to-work equation to facilitate going to scale
- Providing school-to-work technical assistance that helps employers develop strategies for participation that are consistent with their corporate missions

Worksite 21 will focus on OBC member companies in the first year of operation, and then expand to serve other Oregon employers in both the private and public sectors. After a three-year demonstration period, *Worksite 21* will begin transformation to a self-sustaining operation on either a fee-for-service or subscription basis. The chart on page 33 illustrates how OBC is supporting school-to-work through Oregon *Worksite 21*.

It is important to spend time with educators and the education system to understand how dedicated they are to serving the needs of our young people. It also helps them see that business is well intentioned. We recognize education and training as a lifetime experience. We are working to improve all of these connections.

Focus Group Participant

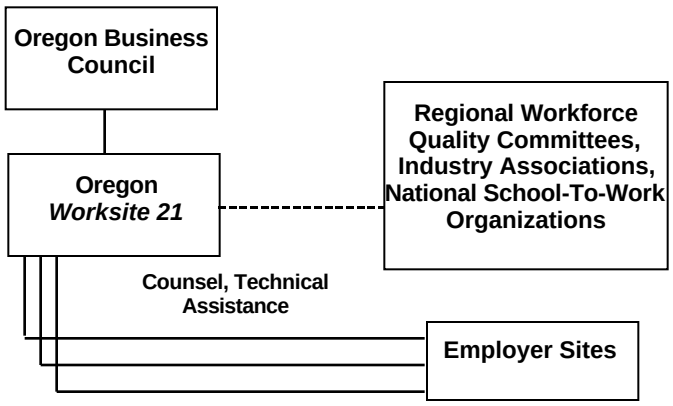
What is *Worksite 21?*

Worksite 21 is an initiative to promote and assist employer involvement in school-to-work

Worksite 21 Advisory Committee

- Jim Harper, Wacker Siltronic, Chair
- Don Brown, Providence Health System
- Tom Eder, A-Dec, Inc.
- Pete Gilmour, Fred Meyer
- Wendy Hawkins, Intel
- Judy Hughes, PacifiCorp
- Deston Nokes, Northwest Natural Gas
- Larry Sears, Portland General Electric

Oregon ***Worksite 21*** Program Structure



The merit of *Worksite 21* is its potential to recruit employers to participate in work-based learning partnerships, and its potential to systematically improve the quality of that participation. The school-to-work movement will not achieve sufficient scale and quality in Oregon without the broad-based participation of employers. *Worksite 21* will be implemented in three stages.

Stage 1: Focus on technical assistance to OBC member companies. OBC companies offer a good starting point because they employ seven percent of Oregon's workforce, and because so many member companies have built a valuable body of knowledge from successful school-to-work programs of their own.

Stage 2: Expand direct services to other Oregon companies and begin to help particular business sectors, primarily through industry associations, develop the capacity to assist their member companies.

Stage 3: Encourage the participation of public sector employers in school-to-work, and help develop smaller employers' participation in school-to-work programs.

Along with higher academic achievement, the Oregon Education Act envisions widespread school-to-work experience for Oregon public school students. The idea behind school-to-work is to give youth the attitudes, skills, and informed expectations that will make them successful people and productive employees in a competitive 21st century economy.

Through exposure to the workplace, students can learn firsthand about occupational skills, broaden their career horizons, and see the importance of academic study to career success. These experiences will include shadowing adults at work in various jobs, participating in worksite internships and working with employers in school-based enterprises that simulate employment. Chart 7 on page 37 illustrates typical school-to-work activities.

Chart 7
Typical School-to-Work Activities

Category	Grade Levels	Examples	Length	Site	Employer Commitment
Career Awareness "Introduce students to the world of work"	1-10	field trips	1-2 hours	work	occasional, light
		guest speakers	1-2 hours	school	occasional, light
Career Exploration "Expose students to a variety of career options"	9-10	information interviews	1-2 hours	work	occasional, moderate
		job shadows	half day to full day	work	occasional, moderate
Structured Work Experience "Develop and assess CAM-related skills according to individual learning plan" (CAM = Certificate of Advanced Mastery)	11-12	paid work	several weeks to months	work	continuous, intensive
		simulated work	several weeks to months	school	occasional, moderate
		school-based enterprise	several weeks to months	school	varies
		unpaid work	several weeks to months	work	continuous, intensive
Teacher Preparation	NA	teacher internships	one week to several weeks	work	continuous intensive

Appendix

About the focus groups

The Oregon Business Council sponsored a series of 33 focus groups during the winter of 1995 and spring of 1996.

Each focus group was a two-hour session with an individual company at its location. Six to ten company representatives attended each session. These representatives included at least two line managers, key human resource managers, and other knowledgeable staff. The president of the Oregon Business Council, Duncan Wyse, facilitated each session, leading participants through a sequence of discussion topics including:

- The nature of the business and its competitors
- Keys to the company's competitive success
- The importance of workforce quality
- A profile of the current workforce
- Occupations which pose significant recruiting challenges
- The extent to which the company hires recent graduates
- The nature of training and continuing education sponsored by the company
- Managers' views about higher education
- Managers' view about K through 12 education
- The company's vision for Oregon's education and training system, and the importance of achieving this vision

Analytical methodology

Focus group information was derived two ways, either through an informal survey of participants done prior to each focus group, or through a tallying of comments made spontaneously during the discussions. Each focus group represented an individual company; there were no groups representing more than one firm.

For the surveys, all focus groups were provided with a small set of written questions asking them to rank the level of

Participating Companies

- A-Dec, Inc.
- Bank of America
- Blue Cross/Blue Shield of Oregon
- Century West Engineering, Inc.
- Electro Scientific Industries, Inc.
- Entek/Emark
- Fred Meyer, Inc.
- Hewlett Packard Corporation
- IMS, Inc.
- Intel
- Kaiser Permanente
- Mentor Graphics
- NAACO Materials Handling Group, Inc.
- Northwest Aluminum
- Northwest Natural Gas
- OrCAD
- Pacific Gas Transmission Company
- Pacificorp, Inc.
- Papé Group
- Pendleton Grain Growers
- Pendleton Woolen Mills
- Planar Systems
- Portland General Electric
- Protocol Systems
- Providence Health System
- Red Lion, Inc.
- Standard Insurance Company
- Tektronix, Inc.
- U.S. Bancorp
- Wacker Siltronic Corp.
- Willamette Industries

difficulty they experienced in recruiting, to assign levels of importance to statements about education, as well as other queries about their experience with the Oregon labor force. Each participating manager was given the opportunity to fill in his or her own survey form, and all responses were counted toward that company's overall profile. The resulting analysis of the survey data looked for consistency in each company's responses (see below). Twenty-nine of the 33 focus groups included survey information.

For the second group of data, an analyst read through the written summaries prepared after each focus group, tallying remarks indicating positive responses to a large set of values, beliefs or practices. For example, if any participant mentioned that his or her company offered tuition reimbursement, that was considered a positive indication for that practice. If more than one participant mentioned the issue, it was counted only once per company. Therefore, all data attempts to paint a picture of each company as an entity. All 33 focus groups had written summaries which were used for this part of the analysis.

The analysis focused on consistency within firms

Because managers within a single company answered written survey questions individually, responses varied within companies. Also, some questions received more responses than others. (Participants did not necessarily answer every question, probably because they did not have expertise within an area or feel qualified to respond.) Therefore, it was important to look at the *aggregated* findings within individual firms, in order to establish overall company experience. This was also important in order to compare firms to understand industry trends.

Aggregated findings focused on consistency within firms. For example, Chart 1 provides the responses to the question *For which occupational categories, if any, are you having trouble finding qualified applicants?* Within an individual firm, different managers may experience different levels of difficulty recruiting for certain positions. For example, two managers within a manufacturing company may each recruit engineers, one experiencing great difficulty locating ceramics engineers while the other experiences only some difficulty recruiting electrical engineers. In order to reflect the overall results, a company was considered to have indicated difficulty if the total number of managers designating a response of three or higher (*some trouble* to *great trouble*) outweighed the number of responses indicating a four or five (*little trouble* or *no trouble*) for each category. If there was no clear majority, the company's response was not used. Occasionally, this report indicates the extent of unanimous agreement. This means that *all* responding managers within a particular firm agreed by indicating a similar response.

In order to protect the privacy of employers, data is attributed only to the total group of participating companies, or to industry segments. Similarly, quotes used throughout this report are attributed only by industry segment. These quotes were transcribed during the focus group sessions and paint a powerful picture of the importance of a high quality workforce to Oregon's competitiveness.

Occupation Profile: Technician

Technicians are critical to Oregon employers

In a world driven by technology, there are more technicians than ever before. Companies of all kinds use technicians; in fact, all but one company in the focus group project reported hiring them. For eight companies, including manufacturers, health care providers and high technology firms, technicians make up an important part of their workforce. Although the percentage within each company varies, technicians average about thirty percent of total staff within this group. For the balance of focus group participants who hire technicians (and employment estimates were not available for two large high tech companies), these workers averaged about nine percent of the workforce. Even for these firms, employers stress that technicians perform critical work, and their importance is growing.

From the focus groups:

> *The bar has been raised for entry level understanding of the manufacturing environment. Product technology is becoming more complex. Technical jobs have become too demanding. Technicians are no longer compliant robots. They have a very high degree of responsibility for operational decisions and managing their work teams. They schedule their vacations, and make recommendations on hiring and team improvement.*

> *Technology is raising the levels of skills required in jobs.*

Technicians of all kinds are in short supply

Perhaps the biggest problem with technicians is that employers simply can't find them fast enough. These are well paid jobs with a future, and they range from manufacturing technicians, to MIS and computer technicians, to medical techs. In some areas, community colleges are beginning to offer training technician programs, and they are very popular.

Technicians are in critically short supply. There's a pretty dry well, particularly in the Portland area with multi-million dollar fab centers going up. We already have trouble hiring for the short term. Also, the quality of the workforce at this level is diminishing, with Intel hiring several hundred per month.

Focus Group Participant

Many Oregon Industries Rely On Technicians

- High technology
- Manufacturing
- Banking and other financial services
- Health care
- Metals
- Forest products
- Transportation
- Film and video
- Food processing
- Environmental services
- Any firm depending on in-house information services or networks

But demand is still far greater than supply. A high tech employer explained, "We would prefer to fill most jobs with local or nearby Oregon residents, but because the labor pool is so tight, we're looking all over, as far away as Arizona. Very few people directly out of school have responded to our ads." And the problem is not limited to manufacturers. A financial services employer said, "We're having trouble keeping technicians, such as in MIS, but this is a reflection of the marketplace."

These shortages cost Oregon employers in a variety of ways including increased wages, relocation and recruiting fees, decreased productivity, or the inability to grow.

From the focus groups:

> *We are getting the trained technicians we need, but we aren't getting them from where we wanted to. Our original plan for new technical graduates was to get them from community colleges, but our demand far outstrips the supply of community college trained people. And we have to compete against other companies for community college graduates. Oregon is not anywhere up to scale in supplying community college graduates for technician positions. New Mexico is doing a better job in this regard. The community colleges here are starting the tech programs but not yet filling the classes. They haven't marketed the classes enough yet.*

> *As an example of the impact of these shortages, we've restricted the number of phone lines in technical support to match the number of technicians available.*

Employers seek solutions to the technician shortage

Oregon employers are responding to these shortages in different ways. Some have begun internal training programs to develop workers with the skills they need. Others have looked to community colleges as a resource to train technical workers, and this trend will likely grow. Focus group participants described three models for current employer practices in hiring technicians: *Start Them Young, Grow Your Own,* and *Seek Experience.*

Start Them Young: Health care providers have had success working with community colleges to develop training programs that often include internships or work experience within medical facilities. According to one focus group participant, "We form partnerships with schools for dental assistants and medical assistants. Having these people work here as part of their schooling gives us a look at people we might hire." The case study on the following page provides an example of an employer that is developing school-to-work connections at a number of levels to ensure a trained workforce.

Grow Your Own: Other employers are developing internal training programs to solve their technician supply problems. Generally, these are manufacturing and high tech firms that take production workers and train them in-house to move into technician positions.

From the focus groups:

> *We used to go outside, five years ago, to get people with high skills. Now we are having trouble finding these people, so we take our brighter and hard working people and train from within.*

> *The philosophy of the production manager is, if the HR person can deliver the work ethic, they can train almost anyone. All of the training is on the job.*

Some companies also work with community colleges to grow their workforce. A high tech employer reported, "With the technician dilemma, we established a program with Linn Benton Community College to train operators to become technicians. It's the only one in Oregon or possibly the West Coast. These people work part time and go to school full time until they get a degree."

Seek Experience: For a few employers, the need for high skills drives them to focus on experienced workers. A health services employer stated, "Among technicians it depends on the specialty. In an ultrasound specialist, we require a higher skill level than a person has leaving a training program such as Portland Community College." One high tech manufacturer explained, "We are having more success hiring military-trained technicians. They are skilled and mature, and they adapt very well to our culture." Another manager said, "Two years ago we adopted a policy to hire only two-year degree people or their equivalent from the military. That meant no more hiring people out of high school. Some of our competitors are raising their hiring qualifications, too. This signals a basic changeover in the technical capabilities of the workforce."

Most focus group employers implied a desire to hire more people directly from schools—if the skills are there—but they don't see training programs as achieving the mark. Yet there was a belief that this is possible, and a worthy goal.

Case Study: Reaching Out For Workers

Health care providers have been among the leaders when it comes to reaching out for workers and working with schools of all kinds to solve workforce problems. This is not limited to technicians, but some of the best success stories have been for this occupation group. A large Oregon employer explains, "Community colleges have stepped up in radiology, and they are partnering with us to produce workers with the skills we need. We are on the advisory committees. Two years ago, you couldn't get an ultrasound tech. Now community colleges have helped us, and we have the technicians we couldn't find before."

"We talk to kids in high school science and math classes—talk to them about the careers—and not a lot of other people have done this. The community college relationship is good. We have access to the schools and we can tell the kids how to get a good job. We hear other industries say, 'We can't get kids interested in paths for our jobs.' We don't fear this."

This employer described a conscious effort to establish connections throughout the education system. "The school connection is more subtle, too. Nursing graduates from the University of Portland, PCC and OHSU are coming out of Benson, the Beaverton Health Careers Program and other local high schools with health programs. It is the same with technologists. It is a high school, two-year and four-year system. Some of these kids had job shadows or tours with us, and some were junior volunteers—candy stripers—way back."

High schools and community colleges could do more to provide trained technicians

Many Oregon employers that rely on technicians expressed that community colleges could train more of the technicians that they need, both by increasing the types of training and the numbers of programs. They also stated that high schools could provide the skills young people need to begin careers as technicians. What is missing? Higher standards and better connections to 2+2-type programs.

From the focus groups:

> *It is critical to the quality of the technician workforce. Kids need to come out (of the K through 12 system) with appropriate skills, and an awareness that there are job opportunities here.*

> *The company needs technical trained employees that can be supplied by the K through 12 system in conjunction with community colleges.*

> *We'd like to see more high school graduates coming out with technical skills.*

> *The bottom end of the (technician) category could get training in high school. For example, Motorola focuses its dollars on a couple of high schools. Students know from the first day they walk into the school that a quality job is within their reach.*

> *High schools need to develop a relationship to reality so when kids can get excited about something, they relate that to the real world. How can they envision how they could use it? Some kids figure out that math and science are cool, but then they lose it because no one shows them that a radiology technician or other health workers use those skills.*

> *OIT in Klamath Falls has a fairly solid model for technicians, but it's very small. We need to overlay higher ed and community colleges with the CAM to be seamless.*
>
> *Focus Group Participant*

Although employers expressed difficulties recruiting technicians more than for any other skill group, there are fairly well-understood principles for solving the problem. School-to-work success stories abound here, and these pilot projects can be used to design programs to benefit many employers.

Occupation Profile: Engineer

More than half of focus group firms hire engineers

Oregon's high technology and manufacturing firms rely on a talented cadre of engineers for technical innovation. In fact, in 22 of the 33 companies participating in the focus groups, engineering professionals make up an important part of their staff.[1] Engineers are critical to their ability to get new products to market ahead of the competition. Utility providers, design consulting firms, metals companies and environmental service firms also rely on engineers for competitiveness.

As this report has documented, employers face some of their most difficult recruiting problems with engineers. As the best and brightest are drawn to the highest bidder, salaries and relocation costs soar. There is also a financial impact from positions which remain unfilled for months, slowing production and growth.

From a high tech employer:

> *We're dead without our workforce. It's critical. For example, we lost a couple of software people last month, and it is hurting us a lot. Critical mass is important here. We have flexible high performance teams. If just a few people are missing, it slows you down.*

Most companies look for seasoned veterans

Every company puts its own spin on the hiring process, but the three basic models for hiring and career path progress described for technicians also apply here. These models

[1]Twelve of the 22 companies included in the engineering hiring analysis have large numbers of engineers: an average of 35 percent of total employees. In the other ten companies, engineers make up a much smaller, but still significant part of total staff: an average of four percent of the total workforce.

> *We would like to hire more people directly out of school, but we're not finding what we're looking for there. The process we go through now is incredibly expensive. It can cost more than $100,000 to get a $70,000-per-year engineer. It would be cheaper to grow someone like this in house in three to five years. This would also help us maintain the kind of corporate culture we want. Now we are constantly blending people from other corporate cultures.*
>
> *Focus Group Participant*

Selected Survey Results*

1. Public higher education is important to our success because we hire:

Many undergraduates from Oregon Schools

Agree:	58%
Disagree:	42%

Many graduate degree professionals from Oregon schools

Agree:	73%
Disagree:	26%

2. We hire undergraduates directly from Oregon schools:

Yes:	68%
No:	32%

3. We hire directly from Oregon graduate schools of engineering:

Yes:	74%
No:	26%

*Based on responses from 19 engineering-oriented companies.

reflect employer preference for the bulk of new hires as described in the focus groups. The majority of Oregon's engineering-related firms follow the *Seek Experience* model. The most compelling reason? Focus group participants explained:

> *It takes a long time for an engineer to come up to speed. It takes two to three years for an engineer not to be a handicap to the people around them.*
>
> *It takes a year to get somebody totally up to speed.*
>
> *It takes time to develop all the necessary skills, anywhere from three to ten years. It isn't likely that a person can be a contributor at the level we need right out of school.*
>
> *Any worker needs three years before they are fully productive.*

For the people we are looking for, there is a one hundred percent shortfall. If there were twice as many in the local market, they would still all be employed.

Focus Group Participant

Several smaller companies combine the *Grow Your Own* model with hiring experienced engineers. An employer explains, "We have moved in engineering away from hiring qualified design engineers. It is in our best interest to bring in design technicians and move them up because we can go through a lot of qualified resumes but can't find the people we are looking for with the product skills. It has been pretty successful, but it is a big investment to train the people." Another employer "grows" some of their new hires by participating in intern programs. "An intern might start in the sophomore year and we invite them back year after year. Then, if they are good, we make them an offer...We like to look at the engineers for awhile first." Fourteen of the 22 engineering-based companies represented in the focus groups mentioned participating in intern programs such as MECOP (Multiple Engineering Cooperative Program).

Large employers seemed most aligned with the *Start Them Young* model. This is probably because they have a good training infrastructure in place, and have enough critical mass to absorb the inefficiencies of new graduates. They also have established intern programs including the well-liked MECOP program.

Not all new hires come from Oregon, however. Nearly every employer of engineers expressed dissatisfaction with Oregon's universities as well as the belief that they must recruit graduates from what they consider the top schools. A large employer of engineers said, "We hired 531 graduates from 138 institutions last year. We cultivate relationships with up to 45 'strategic' universities and we recruit from these schools. Oregon is not on the list." Another company said, "If you are really good, you look at Stanford or MIT, not Oregon State or PSU." A number of employers stated that they believe Oregon universities provide competing services, and that the quality of education would improve if universities focused on establishing centers of excellence, consolidating programs and funds in the most logical locations. A large high technology firm said, "We need a world class university in Oregon, someplace where we'd want to send our kids—a *destination university*. We should maximize our resources through one engineering school with quality, rather than dissipate them through duplication of courses." Another high tech company said, "We have different organizations providing competing services. We need to build a center of excellence and provide trained individuals." A manufacturer addressed this issue for both community colleges and four-year schools: "We need to provide more specialization. Do what you do well at specific institutions."

Even though these companies hire a large number of new graduates, they also support extensive continuing education. This follows the theme that Oregon companies—and high technology companies perhaps lead the way—believe that their workforce is their most important asset. As one employer using this model put it, "Our competitive strengths are in our people, our culture and our environment. Our investment in people is extremely high."

Changing times require changing models

Many employers are finding they must make a transition toward a new model as the old one becomes inadequate. Companies that prefer the *Start Them Young* model may discover that new graduates are no longer meeting their requirements. Others, following the *Seek Experience* model, are finding it is too difficult to recruit experienced workers. The case study, right, tells one such story.

Of course, not all companies fit neatly within any of these three models. Different types of engineering specialties require different recruiting strategies, and the focus groups engaged in lively discussion over hiring policy. What is clear is that engineers present one of the most difficult workforce challenges. And once a company has brought a new worker on board, what happens next? As one manager put it, "The half life of an engineer is three to four years; the first thing we do is send them back to school. Our philosophy is to keep people and keep training."

Continuing education is high technology's holy grail

Engineering-related companies mentioned the importance of continuing education more than any other type of industry. As one large high tech firm put it, "People who work in these companies find that what they learned in college is worthless after four to five years. They need a continuum of learning, including continuing education for professionals." One of Oregon's largest employers of engineers stated that the company has over 700 people enrolled in company-funded continuing education. Continuing education for engineers takes many forms: isolated courses relating to a technology or discipline, seminars provided by proprietary firms, a series of courses for cross training or other skill development, and advanced degrees including a surprising number of Ph.D.s.

Keeping skills current is the most obvious reason that employers care about continuing education; however, it is also an important factor in recruiting and retention. Experienced workers want to know

Case Study: Living With A Hybrid Model

Most of Oregon's engineering-dependent firms will agree that the intense competition for some engineering specialties is driving up labor costs and creating a revolving door. Smaller, fast- growing companies feel it most. Some companies which have depended upon experienced engineers in the past are being forced to develop a new approach.

One mid-size high tech firm is moving from hiring mostly experienced engineers toward the ***Start Them Young*** model. "Our best source (for engineers) is competitors and customers because they have experience with our product… The competition is significant. Intel and other expanding electronics companies are increasing the salaries and benefits. We are amazed to find out what is happening in the marketplace."

In response, the company is now recruiting more college graduates. "We hope to hire people with experience because we haven't had the time to bring them along, but we are finding this impossible. Now our focus has changed because we have invested in training people with less experience."

This transition is not without pain. "There are not enough strong candidates, especially in software engineering. Intel will bring in 100 graduates at a time and it amazes us."

that they will be able to pursue a master's degree or Ph.D. if they relocate to Oregon, and they seem to understand that, without ongoing training, they might be dealing themselves out of the recruiting game. A utility company said, "Continuing education is often an issue for professional people when they are deciding where to relocate." A manufacturer stated, "Long term, the value of having people have access to education is for retention."

Selected statistics from focus group discussions fill in the details. Except as noted, the numbers reflect the percentage of the 22 engineering-related firms that mentioned the listed issue in spontaneous discussion during the focus groups.

We would love it if we could get the advanced continuing education we need for employees from Oregon schools. It would make recruiting easier and stabilize our workforce here. It's a problem that there is no access to part-time Ph.D. programs in the Portland area...
Focus Group Participant

- 20 companies (91 percent) said they wish they had *better access* to high quality continuing education at Oregon community colleges and four-year schools.
- 17 (77 percent) send employees to training-related *college courses.*
- 16 companies (73 percent) mentioned that they offer *tuition reimbursement.*
- 16 (73 percent) expressed the desire for more *flexible programs* which were compatible with work schedules and the demands on working people.
- 15 (68 percent) provide formal *in-house technical training* taught by company employees.
- Two large firms stated that they take advantage of distance learning; eight companies (40 percent of the 20 companies remaining in the sample) said they wish they had *distance learning* opportunities available.
- 6 companies (27 percent) talked about the benefits of *requiring internships* or residencies for engineers as a condition for obtaining a degree, similar to doctors and nurses.

Even though these firms are sponsoring a great deal of continuing education for their engineers, there is a high degree of dissatisfaction with the quality and accessibility of courses and seminars. Many companies cannot find local courses on the subjects they need, and turn to expensive proprietary training. In fact, twenty companies (91 percent) indicated that they use proprietary trainers.

The availability of continuing education is also an important recruiting factor. As already discussed in an earlier section of this report, the perceived quality of K through 12 education is also an important recruiting factor. One manufacturer reported, "People are very concerned about the education their children will receive. On a Texas recruiting trip, it was a fundamental question. Here in town, I spent three hours talking with the wife of an engineer we wanted—talking about school programs and opportunities. I had to take her out to a school. It was important; she wanted a good basic education."

Not very many people say, "Gee, I would never move to Portland because of the rain," but there are concerns about the quality of education for their children. Some of the people haven't really felt comfortable with the quality of K through 12, specifically.

Focus Group Participant

People, Productivity And Prosperity

For Oregon's high technology and manufacturing firms, continuing education is serious business. Millions of dollars are being invested in workforce training and, as technology continues to push rapid change, employers worry that higher education will never keep up. The stakes are high. If employers cannot find the qualified, experienced workers that they need, or rely on education institutions to provide desirable graduates and high quality continuing education, many believe they will be forced to follow the workforce.

From the focus groups:

> *Question: If you had a good graduate program, how big a difference would it make?*
>
> *Answer: A huge difference. We already have had several discussions about opening design groups in Boston, Russia or Poland because we can't find people here. It might help us become more global, but it won't help Oregon.*

Occupation Profile: Operator/Production Worker

Many entry level jobs are becoming more complex

The old stereotype of a production worker standing on an assembly line attaching identical bolts to identical widgets a thousand times a day is just that—old. Most American companies can no longer compete with newly industrialized countries in the mass production model. Manufacturing competitiveness in Oregon and the U.S. is now largely based on high quality, customized products for an increasingly fragmented global market. Just-in-time production, quality circles and the constant change of technical innovation have reduced the importance and practicality of the assembly line. Decision making and responsibility for quality are more decentralized, and employees often work in teams to create products or perform operations from start to finish.

Far from repeating mindless tasks, today's production workers must know more and perform within tighter tolerances than ever before. One manufacturer put it this way, "Competition is more intense because we have to get our products to market faster and do it better." Another manufacturer said, "With ISO 9000, quality assurance is becoming more important."

Employers of operators, production workers and entry level employees of all kinds echo the general feelings regarding employment trends discussed throughout this report: workers need broad basic skills and the ability to learn and adapt. A focus group participant described what his company seeks: "Production workers require less technical knowledge than engineers but still have to have work experience, a good work ethic, and teamwork and communication skills. In people at all levels here, we want to see a thirst for knowledge. Whatever they are doing today, they won't be doing tomorrow, so they need the flexibility to learn more."

Hiring strategies for operators and production workers generally cluster within two of the models used to describe technicians and engineers. Many employers *Seek Experience,*

Proficiency requirements for operators are increasing as industry technology becomes more sophisticated and as customers raise their expectations.

Focus Group Participant

Selected Survey Results

- More than half of the companies participating in the focus groups reported hiring operators and production workers.
- In one-third of these companies, operators and production workers represent an average of about 65 percent of the workforce.
- For the other two thirds, the percentage is much smaller, averaging only ten percent.

being unable or unwilling to provide the training they believe is required for a young person's first job. Other companies meld the concepts in *Start Them Young* and *Grow Your Own*, since very few training opportunities exist for entry level production workers and operators.

The reasons employers prefer experienced workers have more to do with work readiness and maturity than technical skills. Two very different manufacturers expressed a similar philosophy: "When we've hired people directly from schools, we've had to spend too much time teaching them how to work: just simple things like being on time." And, "We try to get someone with a work ethic—some married guy who will show up. We've taken 18-year-olds but they are not desirable. We inherit all of their growing pains, including the abuse problems they typically go through. Then we have to start coaching." However, as explained, some employers have attempted to reduce the amount of general training they do in order to focus their energy on innovation. "We have less ability to train people now than previously. They have to be ready to go when they're hired."

Of course, hiring only experienced workers raises payroll costs and can lead to unfilled positions as employers fight for the small pool of available, experienced workers. Many companies prefer to train workers who have not yet been taught according to someone else's preferences. According to one Oregon employer, "We are a strong culture here. It is easier to take a new person and socialize them from day one. The retention is much better. The hardest decision a person has to make is to quit their first job, leave friends and break an important bond. If we start them here, it is easier to keep them." Entry level production workers and operators generally come to employers from high school or other entry level jobs. All agree that the quality of K through 12 education affects them. Many employers lament the lack of vocational training or hands-on opportunities available to high school students.

> *The more basic skills, the more hands-on experience that students have, the less counseling they need, the more useful they are to us, and the less money they cost us in retraining and training them.*
>
> *Focus Group Participant*

From the focus groups:

> *Vocational education is deteriorating in all the states in which we do business.*

> *We need to provide high school kids with exposure to business. We need paths in the education system for technical and vocational education leading here. If employees are new and well trained, they initially cost less. And if they start here, they are more likely to be loyal and stay here. We want schools to see us as a customer.*

We would like to see more practical work experience both at the K through 12 level and at the college level. Business is all about being competitive, doing it better and cheaper. We can do this if the people who come here have the basic education and the ability to learn.

In addition to traditional on-the-job training where new hires learn at the elbows of experienced workers, a few employers are providing more formal, classroom-based training for operators and production workers. See the case study, *right,* for an interesting approach to the *Grow Your Own* hiring model.

With further training, experienced operators and production workers can move to higher levels such as supervisors and even technicians. Many employers expressed the desire to improve the connections up the ladder. Making these improvements will require a change in attitude on the part of some new entrants to the labor force, as well as better access to continuing education.

From the focus groups:

> *Kids need to come out of school with the idea that education is a lifelong process.*
>
> *People blossom at different times in life. We need to augment companies like ours who work with people who start as a forklift driver and get it together to become an engineer—and without leaving the company. There needs to be an avenue for somebody to continue their education.*

Case Study: Building A High Tech Workforce

High tech manufacturing requires a quality focus from all employees. Operators must perform within precise tolerances. Some Oregon employers use clean rooms and bunny suits to produce products, requiring entry level employees to adapt to a work environment unlike anything they have previously experienced, or even imagined.

One such employer, in partnership with Portland Public Schools and the Portland Development Commission, has created its own off-site training center where temporary workers are trained in a mock clean room setting. "Product quality is determined right at the operation level. Production can't be fully automated. It requires a high level of knowledgeable employees. Work performed by operators is sufficiently demanding that it usually takes a year for an operator to become fully proficient."

The company's training process includes time at the training center, as well as its plant. "We use temporary agencies to find operators. People coming in tend to be diverse, reflecting various ages and education levels. Recruits get four weeks of off-site paid training, then they get eight weeks of on-the-job training at the plant." The company explained why it developed its own training center: "Typical Oregon high school graduates aren't skilled enough and community college technical programs don't correspond sufficiently to what the company needs. The company would prefer not to have to do so much training, but it is willing to."

Using temporary agencies during training allows the company to screen trainees prior to regular employment. "If the company loses people it tends to be because they fail to come to work, be on time and be attentive." These are good jobs. "Presently there is a waiting list of several months among job applicants. The average pay for an operator is about $22,000 a year, but can be significantly higher. "