

## Worker Skill Requirements

*About 50 percent of manufacturing establishments reported they found it increasingly difficult to find qualified workers for production jobs.*

The increasing sophistication and technical nature of many tasks in manufacturing work suggest increasing levels of skill needed for production jobs. Accordingly, most manufacturing establishments reported increasing requirements in computer, problem-solving, and other technical skills (table 6). Another skill requirement that has risen rapidly (faster than any except computer skills) is interpersonal/teamwork skills, a reflection of the prevalence of new forms of work force organization that require work in teams and on multiple tasks. Needs for basic academic skills (reading and math) have increased at a slower rate. More than half of respondents reported that reading and math skill requirements stayed the same. Changes in skill requirements for metro and nonmetro establishments were similar, but a larger percentage of metro plants reported that computer skills required of employees had "increased a lot." Nonmetro plants reported somewhat greater increases in reading and math skills required of employees.

The survey responses suggest that the supply of qualified workers has not kept up with employers' demand.

Over 60 percent of establishments reported difficulty finding qualified applicants for production worker jobs, and over 40 percent had difficulty finding qualified applicants for management work (table 7). For about half of respondents, problems finding qualified applicants for production jobs had increased in the previous 3 years. Problems finding qualified workers were identical for metro and nonmetro plants. On average, both metro and nonmetro respondents said three out of four production workers were fully proficient at their jobs, which means that about one-fourth were not fully proficient. A little less than half of establishments paid for formal training for production workers. Most also said that formal training had increased in the previous 3 years, responses consistent with manufacturers' growing problems with finding skilled workers.

Apparently, the skill most lacking in manufacturing employers' pool of job applicants is "a reliable and acceptable work attitude" (table 8). Thirty-one percent of nonmetro respondents reported a major problem finding job applicants with this characteristic, and 25

**Table 6—Change in production worker skill requirements reported by manufacturing establishments, last 3 years**

Problem	Nonmetro			Metro		
	Increased a lot	Increased a little	Stayed the same	Increased a lot	Increased a little	Stayed the same
	<i>Percent</i>			<i>Percent</i>		
Interpersonal/teamwork skills	32	29	37	33	28	36
Computer skills	32*	32*	32*	40*	29*	27*
Problem-solving skills	29	32	37	28	33	36
Technical skills, other than computer	17	38	42	17	37	43
Basic math skills	16*	32*	50*	14*	29*	54*
Basic reading skills	13*	26*	60*	14*	21*	62*

\* = Nonmetro-metro responses are significantly different at 0.05 level. "Don't know" responses not shown.

Source: ERS Rural Manufacturing Survey, 1996. N=2,625 nonmetro, 1,021 metro.

percent reported it as a minor problem. This was also the leading problem for metro employers. Employers rated problem-solving and other technical skills next in importance, followed by computer and interpersonal/teamwork skills. Basic academic skills were less serious problems, but most employers reported either a major or minor problem finding job applicants with adequate math and reading skills. Metro and

nonmetro responses were very similar. Compared with metro establishments, nonmetro establishments were more likely to report problems with interpersonal/teamwork skills and less likely to report problems with basic reading skills. Other metro-nonmetro comparisons were not statistically different.

**Table 7—Worker proficiency and training reported by manufacturing establishments**

Characteristic	Nonmetro	Metro
	<i>Percent</i>	
Have had problems finding qualified applicants for:		
Management or professional jobs	42	43
Production jobs	62	61
During the past 3 years, problems finding qualified applicants for production jobs have:		
Increased	50	50
Stayed the same	41	42
Decreased	9	8
Average percent of production workers fully proficient at their current job	75	75
Establishment currently pays for formal training for production workers	48	46
In the last 3 years, formal training for production workers has: <sup>1</sup>		
Increased a lot	32	31
Increased a little	39	44
Stayed the same	26	23
Decreased	2	2

<sup>1</sup>Includes only respondents who report providing formal training. N=1,288 nonmetro, 475 metro.  
Source: ERS Rural Manufacturing Survey, 1996. N=2,700 nonmetro, 1,006 metro, except where noted.

**Table 8—Problems finding qualified job applicants for production jobs with specific skills**

Type of skill	Nonmetro		Metro	
	Major problem	Minor problem	Major problem	Minor problem
	<i>Percent</i>		<i>Percent</i>	
A reliable and acceptable work attitude	31	25	28	25
Problem-solving skills	22	29	21	29
Technical skills, other than computer	21	25	24	24
Computer skills	16	23	15	26
Interpersonal/teamwork skills	15*	33*	12*	30*
Basic math skills	12	30	14	28
Basic reading skills	5*	27*	8*	26*

\* = Nonmetro-metro responses are significantly different at 0.05 level.

<sup>1</sup>Includes respondents who said they had no overall problems finding qualified production workers. "Don't know" responses not shown (usually less than 1 percent). N=2,700 nonmetro, 1,006 metro.  
Source: ERS Rural Manufacturing Survey, 1996.

The most important reason for increasing training for production workers was a "heightened concern about product quality," cited as very important by 78 percent of nonmetro respondents (table 9). Improved productivity was the second-leading reason, while adoption of new equipment and management practices was cited less often. The reported lower quality of today's pool of job applicants was cited as important or very important by 71 percent of nonmetro respondents, but other reasons were cited more frequently. Nonmetro respondents placed slightly more importance on product quality and less importance on adoption of new equipment than metro respondents.

Most establishments relied on internal programs for training (table 10). Machinery, equipment, and software

vendors were also cited frequently as important sources of training, followed by higher education institutions, other branches of the firm, and private training firms and consultants. Nonmetro establishments placed more importance on internal programs, educational institutions, and other branches of the firm than did metro establishments. Metro establishments placed more importance on private training sources, while the importance of machinery, equipment, or software vendors was not statistically different for metro and nonmetro establishments.<sup>3</sup>

<sup>3</sup>For more analysis of worker skills problems, see Teixeira and McGranahan (1998), and Gale (1998c).

**Table 9—Reasons for increasing training for production workers**

Reason	Nonmetro		Metro	
	Very important	Somewhat important	Very important	Somewhat important
	<i>Percent</i>		<i>Percent</i>	
A heightened concern about product quality	78*	19*	74*	21*
To improve productivity	70	26	67	27
Adoption of new types of equipment	48*	39*	53*	28*
Adoption of new management practices	44	39	41	40
New employees are less skilled than new employees hired in previous years	37	34	36	31

\* = Significant difference between nonmetro and metro responses at the 0.05 level.  
 Includes only respondents who increased formal training. N=924 nonmetro, 358 metro.  
 "Not important" responses are not shown.  
 Source: ERS Rural Manufacturing Survey, 1996.

**Table 10—Importance of various training sources for production workers reported by manufacturing establishments**

Source of training	Nonmetro		Metro	
	Very important	Somewhat important	Very important	Somewhat important
	<i>Percent</i>		<i>Percent</i>	
Programs within the establishment	59*	34*	57*	32*
Machinery, equipment, or software vendors	34	46	37	41
Vo-tech institutions, colleges, and universities	28*	46*	22*	44*
Other branches of the firm	28*	40*	26*	33*
Private training firms and consultants	16*	38*	17*	43*

\* = Significant difference between nonmetro and metro responses at the 0.05 level.  
 Includes only respondents who reported providing formal training. "Not important" responses are not shown. N=1,287 nonmetro, 478 metro.  
 Source: ERS Rural Manufacturing Survey, 1996.