



How Important Are Skills to Occupational Wages in North Carolina?

Is it better to focus efforts on acquiring academic credentials or skills if you’re working toward building a good-paying career? The answer, not surprisingly, is both. But [new research](#) by the Department of Commerce’s Labor & Economic Analysis Division, with support by NC State’s Institute for Emerging Issues, gives evidence to the relationship between education, skills, and wages and quantifies their impacts on North Carolina occupations.

We have all heard that more education and more years of experience will lead to jobs in higher paying occupations, and this is true. However, when we control for skills, the wage returns for occupations requiring higher education and experience are reduced by anywhere from a third to two-thirds. This demonstrates that skills are indeed a significant determinant of occupational wages in North Carolina along with educational attainment and experience.

This research also quantifies the linkage between education and skills and highlights the importance of skill development at all education levels. Skills should not be thought of individually, but rather as clusters of interrelated skills. By clustering skills (using an exploratory factor analysis), more can be learned about their importance. The four clusters of skills identified can be categorized as: General skills, Technical skills, Management skills, and “STEM” skills (science, technology, engineering, and math).

Skill Cluster Definitions

Skill Cluster	Skill Variables Included*
General Skills	Active Learning, Active Listening, Complex Problem Solving, Critical Thinking, Instructing, Judgment and Decision Making, Learning Strategies, Monitoring, Negotiation, Persuasion, Reading Comprehension, Social Perceptiveness, Speaking, Systems Analysis, Systems Evaluation, Time Management, Writing
Technical Skills	Equipment Maintenance, Equipment Selection, Installation, Operation and Control, Operation Monitoring, Quality Control Analysis, Repairing, Troubleshooting
Management Skills	Coordination, Management of Financial Resources, Management of Material Resources, Management of Personnel Resources, Monitoring, Negotiation, Persuasion, Social Perceptiveness, Systems Evaluation, Time Management
STEM Skills	Complex Problem Solving, Critical Thinking, Judgment and Decision Making, Mathematics, Operations Analysis, Programming, Science, Systems Analysis, Systems Evaluation, Technology Design

* Skills with factor loadings of at least 0.5.
Individual skill variables may belong to more than one cluster.

As one might think, STEM skills have the largest skill impact on occupational wage in North Carolina – i.e. the more important and advanced the STEM skill set is to an occupation, the higher the average occupational wage. Occupations requiring these skills also tend to require higher levels of education. STEM skills are correlated with occupations that require education at an Associate’s degree or higher, particularly at the Bachelor’s and Doctoral degree levels.

General skills – which include speaking, reading comprehension, and critical thinking, among others – also accounts for a strong degree of difference in wages between occupations, more so than Management of Technical skills. While O*NET may refer to many of these skills as “basic,” this research shows they are far from elementary. The level of General skills associated with an occupation is correlated with educational requirements – meaning that as more education is required for an occupation, higher levels of General skills are needed as well. While a causal inference cannot be proven, this may imply that General Skills are acquired through formal education and that there may exist identifiable General skill attainment outcomes, in addition to knowledge outcomes, throughout all education levels. This may be informative to educators and encourage additional attention to advancing General skills through each stage of one’s academic career.

The General skills-to-wage relationship has dipped slightly over the past 15 years. While we don’t have evidence to the cause of this, one potential reason may be the increased labor supply with these skills. Over this period, North Carolina experienced increases in educational attainment – both in high school graduation rates and post-secondary awards.

Technical skills are more heavily related to occupations requiring fewer years of formal education (high school diploma, some college, and Associate’s degree) – suggesting these skills may be acquired through high school or community college education; certification or credentialing programs; and/or other formal or informal training opportunities. Despite the lower level of formal education needed for these occupations, higher degrees of Technical skills do correlate with higher-paying occupations. This relationship between Technical skills and wages has risen over the past 15 years. This coincides with reports from employers, including from LEAD’s own [Employer Needs Survey](#), that there are difficulties hiring workers with the appropriate technical skills. If this is indeed the case, one would assume that those skills would become more valuable and reflect an increase in wages over time, as our research suggests. However, the relationship between Technical Skill level and wages remains low compared to other skill clusters, meaning there is less of an incentive for students or workers to acquire these skills relative to obtaining other skills.

This research may be particularly pertinent to educators and administrators at all levels. This demonstration of skills’ value and their relationship to education levels may seed a deeper discussion of how skills might be intentionally infused in academics and measured as a part of student outcomes.

LEAD’s research into wage growth, labor market inefficiencies, and occupational trends is ongoing. We hope to include insights into the value of subject matter knowledge and the regional differences in skill demands in the near future.