Requirements For Training The Workforce To Build Today's Communications Systems

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Every American worker, less skilled day-laborer to Ph.D. or professional, is subject to increasingly uncontrollable change in their work environment. External forces such as global competition, technology, increased pressure for productivity, shortened product life cycles, and evolving government policies are having increased impact on the day to day functions of both the workplace and workforce.

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The Impact on Individuals

The effects of the changing workplace have had even more dramatic impacts on the individual. The impact of the 'education gap' in both unemployment and wages continues to grow at an alarming rate. In 1970 the unemployment differential between those with less than a high school diploma and those with a Bachelor degree was 3.3% and by May of 2009 it had grown to *10.7%*.

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The Impact on Individuals

As global pressure grows, America's employers continue to raise the hiring standards of basic, technical, and academic preparation for new applicants. Further, employers are looking for more than credentials. They are increasingly focused on demonstrated competencies, real world application, related experience, and preparation for new workplace cultures. The employment standard of tomorrow's workplace is the demonstrated ability to adapt to the constant change in skill and application demands of the evolving workplace.

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New and emerging occupations

- New types of work are sometimes more accurately considered specialties of existing occupations rather than new occupations. Consider ***fiber optics engineers***, who develop telecommunications cable and equipment, and radio frequency engineers, who plan cellphone networks and design related equipment. These workers share most of their tasks with electrical engineers, and

http://www.bls.gov/careeroutlook/2002/fall/art02.pdf

New and emerging occupations

- The most common training is an electrical engineering degree. Both **fiber optics engineers** and radio frequency engineers are, therefore, usually considered electrical engineering specialties rather than distinct occupations.

http://www.bls.gov/careeroutlook/2002/fall/art02.pdf

New and emerging occupations

Evolving occupations were in the SOC, but their duties had changed significantly. Among the more than *45 evolving occupations* were:

Automation or robotics technician

Biomedical engineering technician

Computer security technician

Fiber optics technician

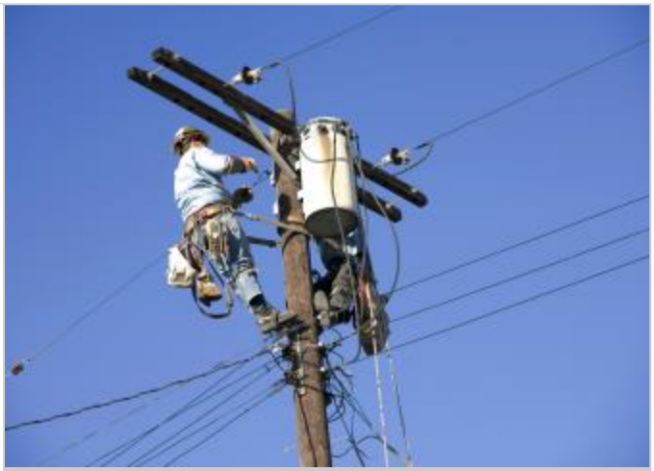
Warehouse manager.

ttp://www.bls.gov/careeroutlook/2002/fall/art02.pdf

Line Installers and Repairers

Summary

Quick Facts: Line Installers and Repairers	
2015 Median Pay	$61,430 per year $29.53 per hour
Typical Entry-Level Education	High school diploma or equivalent
Work Experience in a Related Occupation	None
On-the-job Training	Long-term on-the-job training
Number of Jobs, 2014	236,600
Job Outlook, 2014-24	6% (As fast as average)
Employment Change, 2014-24	13,700



Line installers and repairers often work in teams to install and fix cables and wires.

What Line Installers and Repairers Do

Line installers and repairers, also known as *line workers*, install or repair electrical power systems and telecommunications cables, including fiber optics.

Work Environment

Line workers encounter serious hazards on the job, including working with high-voltage electricity, often at great heights. The work also can be physically demanding. Although most work full time during regular business hours, some work irregular hours on evenings, nights, weekends, and holidays when needed.

How to Become a Line Installer or Repairer

To become proficient, most line installers and repairers require technical instruction and long-term on-the-job training. Apprenticeships are common.

http://www.bls.gov/ooh/installation-maintenance-and-repair/line-installers-and-repairers.htm#tab-2

Line Installers and Repairers

Contacts for More Information

About this section

For information about apprenticeships or job opportunities for line installers and repairers, contact local electrical contractors, a local chapter of the International Brotherhood of Electrical Workers, a local joint union-management apprenticeship committee, or the nearest office of your state employment service or apprenticeship agency. Apprenticeship information is available from the U.S. Department of Labor's toll-free help line, 1 (877) 872-5627 or the Employment and Training Administration.

For more information about line installers and repairers, visit

American Public Power Association

Center for Energy Workforce Development

Telecommunications Industry Association

For information about certification, visit

The Fiber Optic Association

Electrical Training ALLIANCE

O*NET

Electrical Power-Line Installers and Repairers

Telecommunications Line Installers and Repairers

<- Similar Occupations

The Need for Training and Development

- Training is also necessary for the individual development and progress of the employee, which motivates him to work for a certain organization ***apart from just money***. We also require training update employees of the ***market trends***, the change in the employment policies and other things.

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The Need for Training and Development

- The following are the two biggest factors that contribute to the increased need to training and development in organizations:
- **Change:** The word change encapsulates almost everything. It is one of the biggest factors that contribute to the need of training and development.
- **Development:** It is again one the strong reasons for training and development becoming all the more important. Money is not the sole motivator at work and this is especially very true for the 21st century.

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Training design systems

- Job Analysis Study
- Training Systems Requirements Analysis (TSRA)
  - Military
- Knowledge Skills and Ability (KSA)
  - Internships
  - Training organizations

http://www.bls.gov/ooh/installation-maintenance-and-repair/line-installers-and-repairers.htm#tab-2

Importance of KSAs

- **KSA's are used to distinguish the "qualified candidates" from the "unqualified candidates" for a position.**
- **OSHA**
- **National Electrical Code (NFPA)**

http://www.bls.gov/ooh/installation-maintenance-and-repair/line-installers-and-repairers.htm#tab-2

Knowledge

Knowledge statements refer to an organized body of information usually
of a factual or procedural nature which, If applied, makes adequate performance
on the job possible. A body of information applied directly to the performance of a function.

http://www.cdc.gov/hrmo/ksahowto.htm

Skill

Skill statements refer to the proficient manual, verbal or mental
manipulation of data or things. Skills can be readily measured by a performance test where
quantity and quality of performance are tested, usually within an established time limit.
Examples of proficient manipulation of things are skill in typing or skill in operating a vehicle.
Examples of proficient manipulation of data are skill in computation using decimals; skill in editing
for transposed numbers, etc.

http://www.cdc.gov/hrmo/ksahowto.htm

Ability

Ability statements refer to the power to perform an observable activity
at the present time.
This means that abilities have been evidenced through activities or behaviors that are similar
to those required on the job, e.g., ability to plan and organize work.
Abilities are different from
aptitudes. Aptitudes are only the potential for performing the activity

http://www.cdc.gov/hrmo/ksahowto.htm

Development of a training program

- **Development of a training program is the next step after the training need analysis has been conducted and there is a clear consensus on the need of training within the organization**. The next vital question to answer is whether the training should be conducted by an in house expert or from a consultant outside.

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Techniques for Collecting Data for Training Needs Assessment

- These techniques are aimed at extracting data for understanding the target of training i.e. what exactly should be taught in training. Time management may be may be one critical intervention in project handling / management.
- These techniques at the level of job are useful but yet not sufficient in helping understand who requires training and when. Taking the above example further, time management may be a critical intervention for Projects people, but there may already be some who are very efficient in time management and may require the intervention at other level, which is only possible to ascertain with the help of techniques used at the level of the individual or the person.

Alliances with Business / Industrial Associations

Education curriculum and competency standards are no longer within the sole domain of the academy. Such areas as education content, achievement, and application are all reflections of constant evolutions in the world external to higher education. Curriculum is no longer fixed, singular, or limited in scope. Competency standards are evolving at increasing rates as are the related assessments. Further, the expansion of multiple employer related delivery options as well as the growth in industry recognized credentials suggest the need for formal alliances with external partners.

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Industry Recognized Certifications (IRC)

Opportunities for more formal alliances occur with associations that sponsor formal industry certifications. These offer industry recognition of credentials and their accompanying competencies. They offer the individual portability of their recognized credentials and the institution a means of aligning curriculum, competencies, and assessments. More important, industries are increasingly 'certifying' schools as recognized deliverers of their programs.

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Alliances with Professional and International Organizations

Forming strategic alliances with professional organizations and accreditors ensures both alignment of curricula and outcome standards as well as ensuring the portability of the credits and credentials. These alliances are becoming increasingly recognized as significant pipelines for qualified professional applicants and they offer exceptional marketing opportunities to both student applicants and industry.

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Personal Observations

- Classes must be designed for *new* learners
- Online not totally online but Hybrid
- Learning Labs – Hands-on Labs – Open Labs
- Instructor Certification – Must be Subject Matter Experts
- Creates a career pathway for other employment opportunity
- Program Short in length
- Students must be employed in near future after training
- Seamless Transferablity to other organizations

Questions

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