



ARE MY WORKERS COMPETENT IN EHS?

Competency-Based Training to Improve Learning

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TRAINING AND EDUCATION are supposed to provide workers with the knowledge, skills and abilities (KSAs) to perform their work safely and efficiently, but competency gaps continue and lead to occupational injuries and illnesses. Workers new to a job or learning a new skill are at the greatest risk for injury and illness. Regardless of age or industry experience, 35% of injuries occur to workers who were hired within the past year

KEY TAKEAWAYS

- **Competency-based training is focused on specific competencies or skills, otherwise known as knowledge, skills and abilities (KSAs).**
- **This type of training is useful to increase the effectiveness of provided training, thus improving safety performance. By focusing on specific KSAs to accomplish a job, it allows the worker to demonstrate mastery of the targeted KSA before continuing with training. This provides insight as to where additional training or refresher training is necessary.**
- **Competency-based training can help an employer identify and create competent persons to support certain OSHA regulations, such as a competent person for fall protection.**
- **Organizations can develop a competency-based training program with a few simple steps, and they can promote and evaluate competencies in many ways to ensure that workers comprehend the training and can apply it to their jobs to foster a safe, healthful workplace.**
- **This article summarizes the competency-based learning model, analyzes the definitions of a competent worker in EHS, and provides strategies to employ competency-based EHS training and assessment.**

(*Safety+Health*, 2022). This indicates that workers may not be getting the appropriate education and training they need to safely perform their jobs. There is limited information regarding the techniques, skills, tools and competencies workers need, which can affect the overall effectiveness of training and safety (Antonio et al., 2013). Often, safety training programs are deficient in developing and strengthening crucial safety competencies (Pedro et al., 2018). Ensuring that workers have the required competencies is important if workers are to perform their jobs in a safe, healthful manner. Providing effective training is one way to combat the increase of occupational injuries and illnesses and bridge competency gaps, as the primary intent of training is to increase a worker's KSAs (Goetsch, 2019)—thus, the worker's competency—to perform a specific work operation, job or task.

The effectiveness of training can vary based on the selected content, instructors, methods and mediums, as well as the learning style of the adult worker (Pedro et al., 2018). A culture shift in the environmental, health and safety (EHS) field must take place to recognize that safety performance, not training, is the end goal for worker safety; this is especially true when defining and identifying competent workers for EHS activities. Growing a worker's competencies is essential for bridging the gap between existing KSAs and real-life application of KSAs—perhaps through competency-based safety training—to improve safety performance (Wu, 2013) and equip workers with the knowledge and competence to handle the work assigned to them (Arslan & Uzaslan, 2017). This article summarizes the competency-based learning model, analyzes the

definitions of a competent worker in EHS, and provides strategies to employ competency-based EHS training and assessment.

What Is Competency-Based Training?

Developing a worker's competencies is not a new concept. In fact, several books and articles express the need and desirability of applying the competency-based method in training (Blank, 1982; Burke, 1989; McAshan, 1979); however, the authors of this article have observed that the EHS community today has not readily integrated this concept into common training practices. The example outlined in the "Competency-Based Training in the Public Sector" sidebar demonstrates the importance of competency-based training in incident prevention efforts and shows how a lack of competency-based training today continues to impact worker safety.

Competency-based training differs from traditional training methods, as it builds KSAs over time at a worker's own pace, giving the worker the tools, education, resources, and confidence to learn and apply KSAs on their own (Bramante & Colby, 2012). Generally, traditional training methods may not identify specific skill gaps required to improve job performance or a worker's KSAs. Such training methods are often generic, focusing on a general subject or content, centering around the instructor, and basing length on time. Conversely, competency-based training spans the bridge of KSA gaps to improve job performance, is learner-centric, and focuses on specific skill development to expand a worker's individual KSAs and competency levels. Competency-based training presents a learning model in which workers must demonstrate the required level of KSAs for a specific work operation, job or task prior to advancing with their assigned work activities. Additionally, the structure of competency-based training intends to accommodate individual learning styles and speeds (Pedro et al., 2018). This training method helps workers learn in small steps and progress through a variety of education and learning initiatives until they achieve full mastery of a competency, focused on worker behavior and measurable objectives, intended to improve worker KSAs and organizational performance (Wu, 2013). Competency-based training must focus on the development of KSAs to achieve an identified competency (Wu, 2013).

What Is a Competency?

Competency is defined as "the worker's ability to transfer content and skill in and/or across content areas" (Bramante & Colby, 2012, p. 63) or "the why of learning" (Bramante & Colby, 2012,

By combining the "why" and "how" into training, the employee can identify, evaluate and improvise when an unfamiliar hazard, task or situation arises.

p. 65). Competencies are defined as "the KSAs and behaviors contributing to individual and organizational performance," identifying competency on proficiency levels and employer needs (NIH, n.d.). Competencies are "permanent characteristics of a person that manifest when performing a task" (Antonio et al., 2013, p. 93). Competencies relate to the successful performance of an activity and to job performance and can generalize for applicability to more than one activity. As a worker becomes

competent, they can demonstrate the transfer and application of content and skills to a situation, showing a level of expertise one can bring to a situation such as a job (Bramante & Colby, 2012). In other words, education provides the "why" something is done, while training provides the "how" to accomplish what one is doing.

One must tie competency-based training to assessment and validation of worker KSA to adequately acknowledge and incorporate competency gaps into training (Pedro et al., 2018). Competency-based assessment shows the worker's mastery level of a KSA or advanced level of proficiency in their ability to apply skills and knowledge (Bramante & Colby, 2012). As an employee takes on more challenging work, they must master the competencies that align with the type of work to build upon their KSAs. By combining the "why" and "how" into training, the employee can identify, evaluate and improvise when an unfamiliar hazard, task or situation arises. Additionally, the worker will have a greater probability for implementing an effective mitigation control to reduce risk and potentially prevent an undesired event or outcome.

What Is a Competent Worker in EHS?

A competent worker is one who has training, experience, or knowledge and other qualities to allow the person to perform a task, but in the EHS world the term "competent worker" generally has a different meaning. In EHS, a competent worker is generally referred to as a competent person. According to OSHA (1993):

Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or work conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

In EHS, the employer cannot simply assign the competent person title. An employer also cannot deem a worker competent solely through attendance in a single class (OSHA, 2005). Instead, a worker must possess the required KSAs, understand and support the regulatory requirements for which task they want to be competent in, and demonstrate their competency for a given subject area, leaving the employer the responsibility to confirm that its designated competent persons are in fact competent in accordance with applicable EHS standards. Determining worker competence can be a challenge because there is no stand-alone EHS standard outlining the roles, responsibilities and requirements of a competent person. Instead, the requirements and expectations for a competent person are integrated into several EHS standards. The example described in the "Perspective: Competency Can Be a Touchy Subject" sidebar (p. 32) demonstrates the challenges of a group of professionals defining competence within their own field.

Why Do We Need Competency-Based EHS Training?

Competency-based training fulfills organizational needs by providing employers with a measurable evaluation method to determine how well a worker can demonstrate KSAs prior to assigning them a specific task or potential hazard.

COMPETENCY-BASED TRAINING IN THE PUBLIC SECTOR

For high-risk operations, competency-based training can minimize risk and decrease the potential for an injury to occur. After a fatal incident involving a firefighter from Howard County, MD, in 2018, an internal safety review board identified five critical factors that needed to be addressed by leadership; one of these factors was to create a realistic competency-based training program focusing on practical error prevention and error trapping (Reines, 2022). The solution was to send Howard County fire and rescue personnel through a tactical high-risk operations academy rotation to develop KSAs. In this instance, competency-based training helped to increase task cohesion, situational awareness and decision-making when responding to structure fires.

Competency-based training can be a helpful tool when structuring EHS training or to assist employers with identifying and qualifying a worker for the role of a competent person. Competency-based training is an effective method for ensuring that current and future competent persons possess the KSAs with the desired behaviors required to support and enhance the employer's EHS standards (Pedro et al., 2018). Additionally, utilizing a competency-based training method can provide an employer with insulation from citation or penalty in ensuring that they appoint an appropriate person to serve as the competent person, as well as facilitate hazard identification, reduce risks, injuries and illnesses at a worksite, improve safety performance, and help support the safety-first workplace creed (NIH, n.d.; Pedro et al., 2018).

Studies have shown that competency-based training positively and directly impacts an employer's safety culture, and these workers have a greater understanding on the positive and negative results from an outcome or consequence (Pedro et al., 2018). Additionally, trained workers can improve the implementation, sustainment and organizational performance of programs such as lean methodology (Kumar Khanna & Gupta, 2014).

Another benefit of training workers to a competent level is with their improved ability to recognize, manage and continuously build on KSAs. Arslan and Uzaslan (2017) performed a study comparing test scores, course evaluations and performance analyses of untrained workers against those of workers trained with a competency-based learning model. The results showed that the trained participants had 26% improved performance following the training and a 33% increase of technical knowledge and skills, indicating that worker gaps in terms of KSAs can be improved with training and education.

Failure to conduct competency-based training can affect business operations. For certain tasks in the construction industry, a competent person is required to be on site to evaluate conditions, tools, equipment, and procedures to ensure safe work operations and regulatory compliance. The employer must have a competent person to "initiate and maintain" the accident prevention program and provide "frequent and regular inspection" of the worksite (OSHA, 2020). Failure to ensure that a person is competently trained for this task can create unnecessary litigation (OSHA, 1995) from hazards, incidents, quality and defects in workmanship, compliance and regulatory violations, contractual disputes if a competent person is required, and professional negligence from the duty to provide competent services.

The elimination of a recognized hazard is the perfect solution for protecting a worker (NIOSH, 2023), but not all hazards can be eliminated and not all hazards are recognizable. As such, workers can still be exposed to actual or potential hazards. While an employer often provides routine training to workers, some work operations require the employee to have an enhanced understanding of workplace hazards, hazard recognition skills equivalent to a safety professional or expanded risk perception, or require them to rely on a superior decision-making process to reduce risk or prevent a mishap (Cheng et al., 2022). Without competency-based training, the employer reduces its ability to mitigate associated risk by increasing the probability for a failure to occur. For example, a study was conducted to identify the perception of the effectiveness of safety training between management and construction workers (Namian et al., 2022). The study identified a significant discrepancy between these two groups; the construction workers felt that the traditional training methods were not relatable to the hazards commonly found at the worksite, training was not engaging and the content did not help with the transfer of critical

PERSPECTIVE: COMPETENCY CAN BE A TOUCHY SUBJECT

Sandberg (2001) discusses a study at a car company regarding worker views about needed skills to be a competent test engineer. The test engineers were asked to choose the best test engineers in the company, and this is where the differences were displayed. The test engineers held a wide range of opinions on what made an engineer the best. The differences were attributed to how each engineer personally understood their job. The test engineers could not agree on what made a person a successful engineer. This example relates to the definition of a competent person. What in fact makes a worker competent? This is an important question to ask when planning and developing competency-based training. What are the required competencies, how will we address the competency gaps, and how will we assess and validate mastery of competencies at our organization?

knowledge. Conversely, management felt that the training was effective. By not having established competency-based training, workers must evaluate current risk based on their perceived understanding of the probability and severity of occurrence of an undesirable event (Cheng et al., 2022).

Ways to Train a Worker to a Competent Level

Developing worker competencies need not be a complicated or difficult endeavor. A simple method to begin training development is using an existing job hazard analysis (JHA) or standard operating procedure (SOP). The competency-based training program must identify what the worker needs to accomplish, why this information is important, and how the worker will successfully demonstrate their ability and achieve the desired outcome (i.e., student outcomes). An employer should premise its competency-based training program on the following (Bramante & Colby, 2012; Campbell et al., 2010; Pedro et al., 2018; Wu, 2013):

- evaluation of barriers to implementing competency-based training,
- identification of learning priorities and competencies needed to perform a job, both for the job role and then for the individual,
- development of a continuing professional development plan to improve and refine competencies based on improvements in the field and organizational needs,
- delivery of training based on identified competency needs and gaps,
- real-time instructor-based corrective feedback (Blank, 1982),
- evaluation and validation of worker competencies, and
- measurement of safety performance.

Actions to Implement Competency-Based EHS Training

Competency-based training may seem daunting at first. To be successful, a few elements must be understood before developing the curriculum. First, competency-based training is most useful for a task, work operation or job function that holds a high level of risk or has the greatest potential to cause harm (e.g., people, equipment, environment). A risk assessment tool or needs analysis is advantageous to identify and compare probabilities and severities of various events or for determining whether a competency-based training aligns with an organization's long-term strategic goal (Dubois, 1993). The ultimate purpose is to develop a comprehensive competency-based training curriculum,

and formation of a team approach gives a holistic look at the task at hand for identifying, determining and defining specific KSAs required to successfully (and safely) complete the desired task.

Competency-based training is based on the identification of specific competencies required to perform each individual task. Using hazard analysis techniques (e.g., JHA, SOP) allows the specific task to be broken into small steps and presents a thorough look into associated hazards, in-depth assessment of controls and determination of the appropriate KSAs needed to successfully mitigate hazard potential or severity (Blank, 1982). Any hazard analysis results previously accomplished are useful for the competency-based training development process. Once the KSAs are determined, then the curriculum development can begin. The following information provides additional details, actions and ideas to consider when implementing competency-based EHS training at an organization.

Evaluate Barriers to Implementing Competency-Based Training

Organizations may encounter barriers when implementing competency-based training, and the barriers can vary by organization. It is important to anticipate potential barriers to gain a deeper understanding of the obstacles and how they can interfere with implementation. Considerations when evaluating potential barriers include stakeholder perspectives, organizational culture and resistance to change, resource availability and constraints, policy and regulatory landscape, training and development infrastructure, awareness and understanding of the competency-based training concept, time and workload considerations for evaluations and personalized learning plans, and resistance from influential stakeholders. It is important to develop effective strategies to overcome any anticipated barriers.

Gain Support From Leadership

The first step to creating a competency-based EHS training program is gaining support from executive leadership. Managerial support is necessary to effectively roll out competency-based training (Pedro et al., 2018). Gaining support from leadership has several important strategic benefits to the training's success. Leadership support can visibly demonstrate the importance of the competency-based training program by including its role in the organization's long-term strategic goal. Additionally, this can demonstrate leadership's direct involvement and personal commitment to maintaining a safe and healthful workplace. Other benefits include allocating necessary resources, providing additional funding, ensuring active participation from workers and managers, and promoting the continual improvement to workplace EHS (ISO, 2018).

Additionally, several occupational health and safety management systems require executive leadership support before starting or attempting to implement the selected management systems. For example, OSHA's Voluntary Protection Programs recognition requires executive leadership or management to provide all workers with "high-quality" safety and health protection (OSHA, 2003).

Form a Training Team

Planning is an essential element for establishing competency-based training at an organization (Wu, 2013). It is important to form a team in the planning phase to discuss the transformation of the EHS training program into competency-based training. To better inform the path to improvement, employers should collect a variety of thoughts, feelings, and perspectives in planning for, developing,

providing, assessing and updating existing EHS training. It is important to choose the right individuals to serve on a training team; these can be internal or external resources.

Developing a team of experts may be challenging, considering the differences in how individuals perceive competence. Foremost, involve:

- EHS professionals, because they are knowledgeable on EHS standards,
- training staff, because they are familiar with training development and processes,
- instructors, because they understand the training topics, competencies, and KSAs to demonstrate, and
- individuals who an employer anticipates validating competencies and measuring EHS performance later in the process.

Collaboratively, this team of individuals can move forward with reshaping existing training curricula and content to better fit competency-based learning models. Should an employer lack the internal resources to develop and implement its own internal team, it should consider external experts who can assess and validate KSAs and behavior.

Plan for Worker Competencies

Next, use the team to conduct a comparative needs analysis, using these results in the training needs analysis, the training implementation plan and determination of evaluation methods (Arslan & Uzaslan, 2017). Employers must develop the training program to ensure that workers acquire the missing KSAs and competencies, closing the gap; therefore, it is essential to identify these gaps (Wu, 2013). During this step, identify needed competencies, learning objectives, resources, the selection of educational methods, and the standards of performance or measures of competency (Blank, 1982; Campbell et al., 2010).

Needs Assessment

Perform a training needs assessment and consider the results during training design to support learning objectives and needs (Sunyoto et al., 2020). The needs assessment should consider the needs of the organization, the needs of a specific work group, and the needs of individual workers (Thippaiah et al., 2014). Conduct a competency-based training needs assessment before developing or revising training materials (Thippaiah et al., 2014). It is important to set a standard in defining competence for specific positions, work processes or job responsibilities. Use the training team along with managers, supervisors, and other workers familiar with EHS hazards and work tasks to evaluate the work tasks, positions to fill, responsibilities, EHS standards or other indicators that may identify the competencies necessary. EHS competencies can vary depending on the work environment, situation and EHS standards in place. EHS-related competencies may include:

- communication, teamwork, effectiveness, efficiency, self-control, self-confidence, solving conflicts, leadership, consultation, negotiation, results-oriented planning and organization, and commitment to the work performed (Antonio et al., 2013): while these competencies are critical, they must align with the job role/duties and work assignments), and
- hazard identification, safety inspection, compliance with regulations, hazard control and hazard evaluation (Pedro et al., 2018), also revealing the competencies that align with the job role/duties and work assignments.

Workers must have the right qualifications and experience to perform the job correctly and safely (Arslan & Uzaslan, 2017). The success of a competency-based training program includes

FIGURE 1
EXAMPLE PERFORMANCE MATRIX:
FALL PROTECTION COMPETENT PERSON

Skills/Training	Worker 1	Worker 2	Worker 3
Training OSHA 3115 Fall Protection	X	X	X
Demonstration Use of company fall protection systems	X	X	X
Activity Conduct a fall hazard risk assessment	X		
Quiz Identify components of fall arrest systems	X	X	X
Review Company fall protection program	X	X	X
Activity Develop a fall rescue plan			X

the identification of competency gaps with assessment of individual differences (Wu, 2013). A competency-based training program should include no more than five or six competencies for clear focus and execution (Wu, 2013).

Learning Objectives

One must map EHS competencies to learning outcomes and assessment measures (Pedro et al., 2018). Competency-based training must clearly state trainee outcomes (Blank, 1982). The point is that one must identify the learning objectives that align with the necessary competencies before moving forward with training development.

Resources

Implementation of competency-based training may be a challenge in a resource-limited organization; therefore, it is important to determine needed resources during the planning phase of this training method (Thippaiah et al., 2014). For example, a study found that construction management and safety management personnel in the construction industry believed they needed effective instructional tools and strategies to roll out competency-based EHS training (Pedro et al., 2018).

Determine Standards of Performance

Competency-based assessment must follow competency-based training to judge the worker against the prescribed standards of performance. This assessment must support workers' KSAs and occur in a real, authentic or simulated environment (Boahin & Hofman, 2014). It is important to plan for the validation of competency during this phase to successfully execute it following training. Competency-based assessment can measure competencies in many ways, such as attendance, effort, motivation, professionalism and skills (e.g., problem-solving, critical thinking; Bramante & Colby, 2012). Bramante and Colby (2012) indicate that competency-based assessments should be summative (i.e., assessing the value of a training program) and evaluative to gauge worker competencies, and these assessments should include performance tasks and written tasks. While summative assessments can prove the worker's overall mastery level of a competency (Bramante & Colby, 2012), employers can use formative assessments (e.g., practice, checks for understanding, probes for knowledge and skills gained) to track the worker progression of learning a competency.

Employers need to predefine standards of performance to individually evaluate and validate a worker's KSAs, taking into consideration the needs assessment results, learning objectives and available resources. One solution to achieve this is through the creation of a performance matrix. Figure 1 shows an example performance matrix, framed around KSAs, that one might consider for a competent person in fall protection. One can design a performance matrix for a specific or general task

to establish a repeatable, uniform guidance for the evaluation of workers. The matrix provides a uniform approach for validating worker competency once initial training has concluded. Additionally, employers can update or revise performance matrices when creating new EHS training and development plans. In any case, the employer should support the competency needs and learning objectives in the training process.

Create EHS Training & Development Plans

Create training and development plans that incorporate the needs into the EHS training program. A training plan documents the instructor requirements, training methods and materials, and an approach to providing training (Sunyoto et al., 2020). The training plans must align with the competency gaps and learning objectives (Wu, 2013).

Developed training plans and information must build upon the workers' existing KSAs and provide learning experiences to help them retain the information (Pedro et al., 2018). For example, a worker attempting to become a competent person for fall protection can start by reaching a basic level of knowledge regarding fall protection such as related EHS rules and regulations. Beyond this basic level of knowledge, the worker can develop their KSAs and competencies related to hazard identification and communication related to fall protection needs. During each step, the worker must demonstrate their KSAs and acquired competencies at the desired level (Pedro et al., 2018). Consider examples like this during the development of performance matrices and training plans.

During the development or revision of training plans and curriculum, field visits and interviews might be used to obtain detailed inputs to the material and determine whether the content supports the intended competency-based training vision (Thippaiah et al., 2014). For example, Thippaiah et al. (2014) took this approach when updating training for food handlers and developed five separate modules built upon each other to grow KSAs, targeting a 3-month implementation duration along with marked demonstrations of competency prior to moving to the next module. The researchers revised training plans and materials using worker input three times before settling on the final approach, essentially serving as a trial-run prior to implementing the competency-based training method, which is recommended for any employer that rolls out new EHS training.

Present Education & Training to Workers

To ensure effectiveness and accommodate learning differences, present education and training using a variety of means. Those various means can include in-person lecturing, e-learning, virtual computer-based learning, handouts, videos, multimedia and other methods. The training that one provides must align with training plans, performance matrices, learning objectives and the necessary worker competencies. Organizations intend to provide education and training to enhance specific worker KSAs, so any alternation of the material during delivery can interfere with retained KSAs, as well as the validation of worker competency and performance. The next step is to validate a worker's competency and KSAs; organizations can evaluate this at the conclusion of education and training or intertwine validation throughout the EHS training they provide.

Validate Worker Competency: Demonstrating Mastery

Workers must master each designated task before moving to the next learning priorities or objectives (Blank, 1982). Throughout competency-based training, the worker must

effectively demonstrate their KSAs at each stage of the evaluation while acquiring the applicable skills at the desired level (OSHA, 2005; Pedro et al., 2018). This is when the performance matrix becomes important, providing a consistent approach to evaluating worker KSAs and ensuring that competency assessments are secure and reliable (OSHA, 2005; Pedro et al., 2018). The following sections provide information to test a worker's understanding of a training and validate their competency with written, verbal, visual and performance tasks; consider incorporating this information into performance matrices.

Written Task

Accomplish the written task by issuing a written test, quiz, or pre- and post-knowledge check. Consider comprising the written document of true/false statements, multiple choice questions, fill-in-the-blank statements, and short open-answer questions. Figure 2 provides an example written task for hazard communication. The written task involves a worker answering a few questions on the training provided to them, demonstrating they can show mastery (in writing) of their training topic. The worker must recall information from the presented material, demonstrate overall comprehension, and apply deductive reasoning or critical thinking skills to varying degrees (Yuskel & Fidan, 2019). Typically, the evaluator maintains the physical document to determine which questions were answered correctly, incorrectly or left incomplete. The evaluator's document can help to identify areas of concern or deficiencies and provide applicable corrective measures. It can also help determine whether additional training is needed to clarify misunderstood topics and emphasize or reinforce key learning objectives.

Verbal Task

The verbal task is a testing method to determine whether the worker retains specific knowledge using the conversation approach method. The evaluator asks the worker a specific question or a series of questions with the intent of verifying gaps in the worker's understanding or comprehension of the training material. Any critical information omitted or not clearly articulated indicates the worker is potentially at risk and will require additional training and development to become proficient in the specific competency. Figure 3 shows an example of a verbal task for ladder safety. The example shows a lists of questions workers are to verbally answer at the conclusion of training to demonstrate their acquired KSAs on the topic. The primary objective of testing with verbal tasks is to create a conversation and directly engage the worker with a higher-order cognitive learning practice through active and direct engagement.

Visual Task

Almost 90% of the information that organizations provide to workers is visually acquired (Inouye, 2018). Recognizing an existing or potential hazard is the first step in hazard prevention and mitigation. Therefore, the intent of the visual task is to determine whether a worker can identify potential hazards. Figure 4 (p. 36) shows an example of a visual task for a facility audit in an automotive garage service bay. The figure shows how trainers can present visuals, or images, related to the training so workers can demonstrate their mastery of what they see and learned from the training. Recognizing potential hazards provides the worker with an opportunity to implement a corrective measure or avoid an undesirable outcome (Pontsler & Fisher, 2020). Additionally, the visual task tests the worker's critical thinking skills by "seeing safety." One main benefit of

using a visual task is permitting the worker to directly apply the recently learned information to a real-world problem. If the worker is unable to identify a specific or "must know" hazard, or other visual-specific items, provide the worker additional assistance or guidance before their competent person designation.

Performance Task

Performance tasks are another method for ensuring that workers can apply educational material in a hands-on setting. Asking workers to complete a performance task is beneficial because

FIGURE 2 EXAMPLE WRITTEN TASK

Hazard Communication

Write answers the following questions:

1. True or False

Safety data sheets are standardized, 16-section, detailed documents prepared by a manufacturer or importer for a chemical.

2. Multiple Choice

What does this pictogram represent?



- A. gas cylinder
- B. corrosion
- C. flame
- D. oxidizer

3. Fill-in-the-Blank

Name one location you can access safety data sheets.

4. Open Answer Question

Describe the hazardous chemicals used in your immediate work area and how to protect yourself against exposure.

Note. Pictogram from Hazard Communication Pictograms, by OSHA, n.d., www.osha.gov/hazcom/pictograms.

FIGURE 3 EXAMPLE VERBAL TASK

Ladder Safety

Verbally answer the following questions:

1. What are the main hazards when using an extension ladder?
2. What are the maintenance, cleaning and storage requirements for extension ladders?
3. Why is proper storage important?
4. What parts routinely require maintenance or cleaning?
5. How do you store an A-frame ladder after use?
6. What is the biggest concern when working on a fixed ladder?
7. Where is the standard operating procedure for extension ladders located?
8. Define the term "extension ladder."
9. Discuss the importance of three points of contact.
10. Recommend a mitigation solution for the following hazard: Working near power lines.

replicating an actual or physical practice outside a classroom setting is often difficult. Workers must show what they have learned and demonstrate competencies by completing the assigned tasks efficiently and effectively. Figure 5 provides an example of a performance task checklist to evaluate a worker's performance for forklift inspections. The example consists of a list of tasks the worker must perform to demonstrate their acquired KSAs on performing the forklift inspection. Organizations can establish controlled and monitored settings for workers who did not show proficiency to coach, offer positive corrective feedback, alter undesirable behaviors or actions, and allow an environment for workers to learn from their mistakes (Blank, 1982).

Measure Safety Performance

A workplace's safety culture is not an independent value, but rather a combination of the organization's collective attitudes, values and knowledge. Measuring safety performance can assist an organization in prioritizing which safety programs have the greatest effect and impact on workplace safety and its culture (Paz, 2019a). To understand which programs positively affect the safety culture, you must first identify, monitor, collect, compile and analyze current or existing data (Paz, 2019a). The organization can use the analyzed data to measure the competency-based training effectiveness via pass rate, feedback surveys, and audit and inspection scores (Paz, 2019b). Any performance matrix results, workplace observations, EHS trends, and injury and illness data can also assist with measuring performance to determine needed revisions to training and education efforts.

Continually Evolve Needed Competencies

Finally, continue to evolve the KSAs and develop competencies to embrace the learner-centric mentality. Competencies can change over time based on organizational needs, jobs and tasks performed, workplace environments, and the overall composition of the workforce. Periodically reviewing and updating any needs assessments in place is important to ensure accuracy and relevance. It is equally important to review and revise established learning objectives, performance matrixes, training content and training methods to ensure that learning objectives are up to date and accurately reflect the competency required to perform the jobs safely.

Conclusion

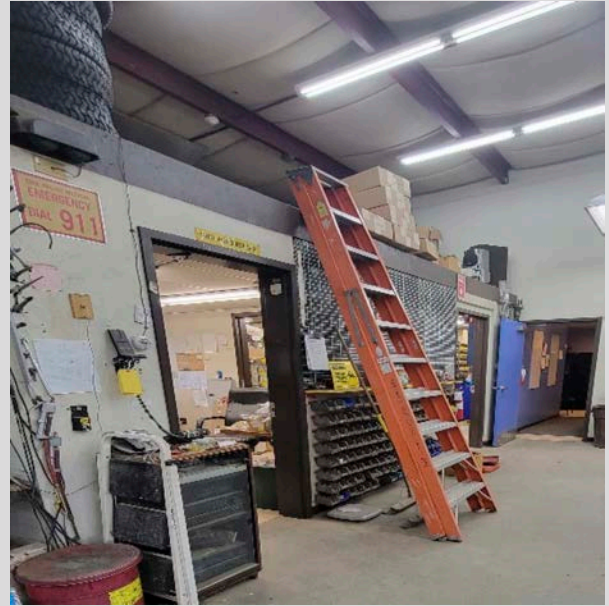
"Be safe" and "safety first" are statements used by management and workers alike, but what do they mean? Everyone has their own understanding on how to be safe, and this varies based on an individual's experience, knowledge and education. Organizations can individually evaluate the training they provide to assess worker demonstration of KSAs and comprehension and can accomplish this through competency-based training. Competency-based training is an evolved topic in the EHS field that organizations can use to support the OSHA definition of a competent person and ensure that workers have the highest level of awareness and information needed to work safely. The process of employing a competency-based training program consists of identifying the competencies to promote and encourage, as well as the learning priorities for job roles and individuals to support the competencies. Emphasis must be placed on continuing professional development plans to support organizational needs and refine competencies over time, in addition to developing and delivering training with these competencies in mind. Competency-based training relies on evaluation to validate worker retention of training and

FIGURE 4 EXAMPLE VISUAL TASK

Facility Audit: Automotive Garage Service Bay

Look at the image and answer the following questions:

1. What are the primary hazards in the photo?
2. Why are they hazards?
3. What can you do to correct them?



ERIC ST. PIERRE

FIGURE 5 EXAMPLE PERFORMANCE TASK

Forklift Inspections

Worker has demonstrated the following:

	Yes	No
Locate the operator's daily pre-use inspection form.		
Show evaluator all pre-use inspection components.		
Identify damage on a forklift.		
Describe how to take a forklift out of service.		

demonstration of KSAs, showing whether there is a need for additional training or education. While implementing and sustaining a competency-based training program takes time, it can yield a reduction in occupational injuries and illnesses and is suggested for any organization seeking to improve its EHS training efforts. An opportunity exists for future research to further examine the use of competency-based training in the EHS field to gather new data about the outcomes of specific EHS topics, the background of workers deemed competent, the summative and formative methods used to evaluate the effectiveness of training, and best practices for competency-based training. **PSJ**

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