AC 2011-933: CREATIVITY AND WORKPLACE SAFETY: PROACTIVE SAFETY PRACTICES ARE VITAL IN PREVENTING EMPLOYEE INJURIES

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Creativity and Workplace Safety: Proactive Safety Practices are Vital in Preventing Employee Injuries

Abstract

Today's workplace is filled with hazards that can impact the overall success of an organization. Workplace injuries caused by such hazards can significantly affect the operation of an entire organization. Therefore, how to manage organizational safety issues has become a challenge in various industries. The concerns about workplace safety are forcing companies to reevaluate their operations and safety management practices in order to become more safety conscious while remaining competitive.

An effective and progressive approach that is currently being taught and used in industry, places emphasis on proactive safety programs. Through the use of creativity concepts and techniques, proactive thinking can be developed to help identify and correct hazardous situations before injuries occur.

As future leaders and professionals in industry, it's important for engineering and technology students to develop skills in proactive thinking to reduce workplace injuries.

This paper will discuss how creativity concepts and techniques can be used to develop proactive thinking in order to reduce job related injuries. Common workplace safety concerns and proactive strategies to prevent employee injuries will be identified. The authors will also provide ideas on how engineering and technology faculty can incorporate workplace safety concerns into their courses to help prepare students for future leadership responsibilities in the 21st century workplace.

Introduction

The workplace can provide many career opportunities and challenges for graduating students. The recent global recession has highlighted the need for students to develop multidisciplinary skills for successful careers[1, 2]. While pursuing their careers, many engineering and technology students will perform roles that are outside their principal academic fields of study[3, 4]. In addition to having to deal with career issues related to global competition and technological change, an additional challenge students are likely to encounter is safety management. As future leaders and professionals in industry, engineering and technology students need to develop an understanding of safety management responsibilities[5].

Workplace injuries can have significant consequences on the success of organizations in every industry. The problems associated with workplace injuries, include medical and rehabilitative costs, higher workers compensation premiums, lost productivity, personal injury lawsuits, OSHA citations, and the time lost required for accident investigation[6]. In 2008, OSHA stated "recent estimates place the business costs associated with

occupational injuries at close to $170 billion- expenditures that come straight out of the company profits" (para. 10)[7]. The governmental and economic pressures associated with workplace safety provide companies with the incentive to develop effective safety practices while maintaining efficiency.

The practice of correcting dangerous workplace conditions after employee injuries have occurred is no longer acceptable in today's dynamic and competitive economy. Instead, companies need to adopt proactive safety practices that focus on accident prevention[8]. By using creative problem-solving to deal with safety concerns, companies are discovering that they can reduce workplace injuries while simultaneously remaining competitive. Conversely, those organizations that aren't proactive and fail to address potential safety concerns will forgo the opportunities for positive change and suffer financially in the long run.

Identifying potentially dangerous workplace situations and implementing corrective safety practices allow companies to prevent employee injuries. Additionally, proactive safety practices can directly involve employees in injury prevention and encourage them to assume more responsibility for workplace safety[8]. Consequently, the implementation of proactive safety practices can result in win-win opportunities for the employees and the organization.

Reactive Versus Proactive Thinking

Proactive thinking can be developed by using creativity to stimulate the imagination[9]. Proactive thinking can be used to anticipate various situations and develop strategies to either prevent an unfavorable situation from occurring in the first place or have strategies in place if the situation arises. Anticipating different situations and developing proactive strategies to prevent or prepare for those situations can be facilitated through the understanding of creativity concepts and techniques.

When considering workplace safety, some organizations undergo safety changes only if they are forced to do so, generally in response to an employee injury or increase in accidents. In other words, some organizations wait until injuries or accidents occur and then they initiate new safety practices or standards. For example, an organization may experience an increase in employee injuries due to poorly maintained equipment. As a result, the organization rushes to initiate a new safety practice, such as safety training, without fully considering other options. In this case, the organization was initially behaving in a passive manner, taking action or reacting only after a series of injuries had occurred. By being reactive, employees were injured, and the immediacy of the situation limited the safety options available to the organization and the ultimate safety practice implemented.

On the other hand, organizations that continue to be successful are the ones that are proactive[10]. By being proactive, organizations can implement accident prevention strategies to prevent or reduce workplace injuries. Through creative thinking, workplace

hazards can be anticipated and proactive safety practices implemented to prevent an accident from occurring in the first place.

For example, recognizing the fact that employees are regularly using certain equipment to perform their jobs, management can use proactive thinking to anticipate injuries that might result from poorly maintained equipment. Therefore, the organization can take the initiative and implement a thoroughly considered equipment maintenance program. Through proactive thinking, the organization can undertake positive change to prevent future equipment malfunctions and thus, prevent injuries to those employees using that equipment.

Being proactive provides an organization with more options and time for dealing with a given situation. The organization will be better able to consider the consequences of any given action, and have the opportunity to make well thought out decisions. Thus, the organization will be able to increase the probability that the best course of action will be chosen, in the above example, preventing employee injuries by implementing an equipment maintenance program.

Organizational Benefits Of Pursuing Proactive Thinking

There are benefits companies can realize by pursuing proactive thinking. From a safety standpoint, Table 1 lists some of the benefits associated with proactive thinking as it relates to workplace safety[8, 11, 12].

Table 1: Benefits of proactive safety practices

- Correct hazardous conditions
- Prevent/reduce future employee injuries
- Create awareness of safety concerns
- Encourage the employees to assume more responsibility for workplace safety
- More time to consider alternative safety practices
- Opportunities for safety innovation
- Reduction in medical and rehabilitative costs
- Avoidance of higher worker compensation premiums
- Fewer employee injury lawsuits
- Reduction in time lost due to employee injuries and accident investigation
- Reduction in OSHA violations and citations
- Fewer future safety regulations by the state and federal government

Creativity

In a rapidly changing and complex global economy, creative problem-solving is vital for the success of every organization. Therefore, as future leaders, it's important for students to develop their creative potential. The creativity concepts and techniques identified in

this paper can help students to effectively deal with the various safety challenges they will encounter in the workplace.

Define Creativity

Because creativity means different things to different people, there is no universal definition of creativity. Consequently, creativity is a concept with various definitions. One definition that this paper will focus on is that creativity can be described as a process that involves phases of convergent and divergent thinking[9]. Fortunately, the creative process can be enhance and developed using creativity concepts and techniques.

For the purposes of this paper, the principal creativity phase that is especially significant when trying to develop proactive thinking to reduce workplace injuries is idea generation.

> **Idea Generation**- Once the problem has been accurately defined, in this case, reducing workplace injuries, the problem solver can engage in the phase of idea generation. During this phase of the creative problem-solving process, the problem solver attempts to generate a "quantity" of ideas[9]. Effective idea generation requires deferred criticism about any idea suggested. The ideas proposed should include all types of ideas, from obvious and well known ideas to new and unusual ideas. The more ideas generated the greater the opportunity for identifying the best solution possible.

Creativity Concepts and Techniques

Creativity concepts and techniques can be used to develop proactive thinking. Given the limits of the paper, the authors will identify and discuss six creativity concepts/techniques that can be used to promote proactive thinking to reduce employee injuries[9, 13, 14].

1. Challenge the status quo

Most people have been conditioned to blindly follow rules and policies without questioning whether a better rule or policy can be developed. Opportunities for proactive thinking can be realized when the status quo is challenged, even if existing rules and policies are working well. Creative problem solvers can avoid complacency by asking questions, taking risks and challenging the status quo. To avoid complacency and obsolescence of ideas or policies "if it's not broke- improve it" should be the motto used in every organization. Challenging rules and policies can promote the development of new and better ideas or ways of doing things.

Ensuring workplace safety requires that safety practices and policies be constantly evaluated. Otherwise, safety practices may become obsolete and no longer prevent injuries.

2. PPC technique

A natural tendency for most people is to resist change or anything new. People tend to prefer the status quo due to its certainty and predictability. Creativity requires that the problem solvers overcome the habitual resistance to new ideas and different ways to do things. The PPC technique (Pluses, Potentials and Concerns technique), can help to overcome the habitual negative reactions to a new idea. The guidelines for using the PPC technique include:

(1) First step: identify at least 3 current positive aspects about the proposed idea
(2) Second step: identify at least 3 potential future benefits about the proposed idea if the idea was to be implemented
(3) Third step: identify concerns about the proposed idea that need to be addressed in order to implement the idea
(4) Fourth step: generate ideas to overcome the identified concerns

To overcome resistance to new ideas to promote workplace safety, the PPC technique can be used to identify the benefits or positive aspects of new safety ideas.

3. Learning from past mistakes

Sometimes the discovery of creative ideas can result from "trial and error" and learning from past mistakes. When attempting to identify new ideas or finding a better way to do something, overcoming the fear of making mistakes is critical. The creative problem solver needs to have mental toughness, which is the ability to perverse and overcome failure, criticism, and difficulty, and at the same time, learn from past endeavors.

Likewise, developing effective safety practices will often involve learning for past efforts to determine which practices worked, which ones didn't work, and why. It's important to use past safety practices and policies as learning opportunities and make improvement when warranted.

4. Identify several solutions

Traditional problem solving tends to focus on finding the right solution or answer for a given problem. Creativity requires that for any given problem, there are multiple solutions. Therefore, when trying to solve a problem, the creative person will focus on identifying several ideas/solutions to a problem in order to find the best solution. By identifying several solutions for a given concern, the problem solver can compare ideas/solutions and identify the best solution.

By identifying several solutions for a given problem, the problem solver improves the chances of finding the best solution. Problem solvers should be trained that after a solution has been identified for a given problem, they need to continue to search for a second, third, and fourth solution for that problem.

Developing proactive safety practices requires that several solutions be identified in order to find the best safety practice. By identifying several solutions for a given safety concern, the chances of identifying the best safety practice will be improved.

5. Verbal brainstorming technique

Verbal brainstorming is a widely-used creativity technique that utilizes a group for generating ideas to solve problems. The guidelines for verbal brainstorming include:

- establish an idea quota, a minimum number of ideas that must be generated
- state an idea without explanation
- defer criticism on any idea stated
- any idea stated belongs to the group and not the individual who stated the idea
- combine ideas and/or build on any idea stated

When using verbal brainstorming to deal with safety concerns, the group will attempt to generate a quantity of ideas for reducing workplace injuries.

6. "What if" technique

An effective and well known creativity technique that can facilitate proactive thinking is the "what if" technique. Using the "what if" technique can enable a problem solver to simulate different scenarios about a given concern. This technique allows the problem solver to probe what is possible and what may seem to be the impossible. From a safety standpoint, "what if" scenarios can help management to identify possible safety concerns or consequences and develop strategies to prevent injuries from occurring in the first place.

Common workplace safety concerns and strategies

To help prepare students for their future leadership responsibilities, the authors have identified common workplace safety concerns leaders may encounter and proactive strategies they can use to prevent injuries. The authors have provided examples of how the previously discussed creativity concepts/techniques can be used to promote proactive thinking to reduce injuries associated with common workplace safety concerns (Table 2).

Table 2: Common workplace safety concerns and creativity concepts/techniques

Workplace Safety Concerns	Creativity Concepts/Techniques
• Unsafe working habits	Challenge the status quo
• Violation of safety rules	PPC technique
• Poor equipment or machine maintenance	Learning from past mistakes
• Poor site cleanup or housekeeping	Identify several solutions
• Lack of safety training	Verbal brainstorming
• Horseplay or inappropriate behavior	"What if" technique

1. Safety Concern: Unsafe working habits

Workplace injuries can sometimes be the result of unsafe working habits employees have developed over the years. Unsafe working habits can include employees taking short cuts and/or ignoring safety rules. The Government Accountability Office (GAO) suggests that managers need to initiate effective disciplinary action against employees who have numerous accidents because of unsafe working habits. In addition, the Environmental Protection Agency (EPA) also indicates that employers will need to provide safety training to all newly hired employees to ensure that they do not develop unsafe working habits (2010). Various organizations have been addressing this issue in different ways however, it's critical that each organization develop a technique that can be applied to each unique culture and working environment[15, 16].

a. Application of Creativity Concept/Technique: Challenge the status quo

A lack of safety training can sometimes lead to unsafe working habits by employees. When to undertake safety training is an issue that management needs to address in order to reduce employee injuries. For example, the existing organizational practice or policy for safety training may require that safety training be undertaken only "as needed." Unfortunately, this practice may result in management providing safety training only after an accident or injury has occurred.

Consequently, management must challenge the status quo if unsafe working habits are to be eliminated. Challenging the status quo concerning the above mentioned safety practice may require that management investigate when to perform safety training, such as on a monthly, weekly or even daily (i.e. 5 minute safety updates at the start of every shift) basis.

b. Proactive Strategy

The consistent and periodic review of the status quo, including safety practices and standards, is essential for ensuring workplace safety. It's important for supervisors to properly supervise their employees to ensure they are working safely. Old habits are sometimes difficult to eliminate, especially when those habits seem to make the employee's job easier or if an employee has been injury-free during his/her employment. Therefore, employees need to be constantly reminded of the importance of workplace safety and consequences of poor working habits. Through training, unsafe working habits can be unlearned, and new safe work habits learned. Periodic training can also prevent unsafe habits from developing in the first place.

2. Safety Concern: Violation of safety rules

Workplace injuries can sometimes be the result of employees violating safe work practices. Violations of safety rules or practices can either be intentional or unintentional.

Many corporate safety policies often include certain enforcement statement with regard to the violation of safety rules. An example may include termination of an individual who violated three written general safety practices within a six month period, or suspension or even immediate termination because of breaking safety related rules and/or policy. The State of Michigan (2008) has documentation that states that the safety and health rules will uniformly enforce disciplinary action among partnering employers on their projects. It further states that employees who fail to work in a safe manner will be automatically dismissed from a project due to the deliberate violation of safety rules or safety policies and procedures. Therefore, it is important that an organization develops a technique to help employees to adhere to their safety rules or policy[17].

a. <u>Application of Creativity Concept/Technique</u>: PPC Technique

An idea generated to reduce or prevent employees from violating safety rules might involve "rewarding" employees for not violating safety rules. To explore this idea, management might utilize the PPC technique (Pluses, Potentials, Concerns technique).

Step 1: Identify at least 3 current positive aspects about the (reward) idea:

- the idea allows the employees to assume direct responsibility for their safety
- the idea can be viewed as a joint management-employee effort to ensure safety
- the idea is an indication of management's concern about employee safety

Step 2: Identify at least 3 potential future benefits of the (reward) idea:

- over time, working safely may become habitual employee behavior
- once working safely becomes habitual, management can include non-monetary incentives
- the idea might lead to other types of joint management-employee cooperation

Step 3: Identify concerns about the (reward) idea:

- providing rewards may be costly to administer
- using rewards to encourage safety is a short term solution
- using rewards to encourage safety amounts to bribing employees

Step 4: Ideas to overcome the identified concerns:

- rewards don't have to be monetary- recognition or praise can be used
- the idea can have positive long term employee behavioral implications
- rewards are not bribing- the idea is simply a way to involve the employees in the solution to the problem

b. Proactive Strategy

Using rewards or incentives to modify behavior is a long recognized and effective solution for improving behavior. Therefore, rewards can be an effective way to reduce workplace injuries. When using incentives to modify behavior, it's important that management helps the employees recognize the direct relationship between obeying safety rules and receiving rewards. Also, the consistent monitoring of employee behavior and administration of rewards is essential for a reward/incentive program to be effective.

3. Safety Concern: Poor equipment or machine maintenance

Employee safety can sometimes be compromised by equipment or machinery that is not properly maintained. No matter what the industry referred to, preventative maintenance is important. According to the European Agency for Safety and Health at Work (2010), proper maintenance is essential for eliminating hazards and managing risks at the workplace. In another words, the lack of maintenance or inadequate maintenance can cause serious and deadly accidents[18].

a. Application of Creativity Concept/Technique: Learning from past mistakes

To prevent workplace injuries, it's important that past mistakes are not repeated, including, allowing for poor equipment or machine maintenance. For example, an accident or near accident may have occurred due to the maintenance staff or an employee's failure to clean a machine before or after use. Management can use that incident as a learning opportunity. Management can use that incident as an opportunity to review safety practices with the maintenance staff and employees, including the importance of equipment/machine maintenance.

b. Proactive Strategy

Regular equipment and machine maintenance is important for employee safety. Properly maintained equipment and machines can help to reduce workplace injuries. Supervisors need to develop a positive work relationship with the maintenance staff in order to ensure that equipment/machinery maintenance needs are timely met. At the same time, it's important for employees to perform their own safety inspections of equipment/machines they are about to use to ensure equipment/machines are in proper working order.

4. Safety Concern: Poor site cleanup or housekeeping

An unsafe working environment can sometimes be due to poor housekeeping or a failure to cleanup the worksite at the beginning or end of each shift. This concern was also reported by the Alexander County Government in North Carolina, that facilities with poor housekeeping generally have poor safety results, while facilities with superior housekeeping typically have very few injuries (2006)[19].

a. Application of Creativity Concept/Technique: Identify several solutions

Identifying several solutions for dealing with poor housekeeping can help to reduce workplace injuries. For example, after determining that a poorly cleaned work site was the cause of an employee injury, the initial solution identified for solving this problem might be for each shift supervisor to be responsible for the inspection and cleanup of the work site. However, creativity requires that several ideas for a given problem be identified in order to compare ideas and find the best solution. Other ideas for solving the housekeeping problem might include: requiring the employees to assume the responsibility for work site inspection and cleanup, having the preceding (employee) work shift to be responsible for work site inspection and cleanup, requiring that the custodial department be responsible for work site inspection and cleanup, or hiring an outside contractor to provide inspection and work site cleanup.

b. Proactive Strategy

Workplace injuries can sometimes result from poor housekeeping or a failure to cleanup the worksite before or after a shift. Developing a plan for addressing this concern can reduce injuries. Regardless of the ultimate solution identified, it's important that the work site be inspected to ensure proper housekeeping. Proper housekeeping of the work site before/after a job or shift can help ensure that the site is free of hazardous conditions that might cause employee injuries. Getting input from the employees in identifying the best approach for work site inspections and cleanup can directly involve the employees in injury prevention.

5. Safety Concern: Lack of safety training

Workplace injuries can sometimes be due to a lack of safety training. Management cannot assume all employees are aware of the safety practices and existing hazards of their company or industry. This may especially be true of newly hired employees. Attributer of the lack of safety training towards accidents has been documented in various industries. During an accident investigation of the Plutonium Spill at National Institute of Standards and Technology (NIST) on June 9, 2008, investigators reported a lack of safety training and inadequate laboratory procedures led to this particular accident (U.S. House of Representative, 2008). A similar concern was also identified in the taxi business where the National Institute for Occupational Safety and Health (NIOSH) identified a lack of safety training among taxi drivers often causes drivers to be victimizes (2009). Providing adequate safety training is essential to various businesses and industries[20, 21].

a. Application of Creativity Concept/Technique: Verbal brainstorming

Because workplace injuries can sometimes result from a lack of safety training, what type of safety training to provide employees is an issue that management needs to address to reduce injuries. For example, recognizing that different

employees prefer to learn in different ways, management might use verbal brainstorming to identify various types of formats for safety training. Possible safety training formats generated from verbal brainstorming might include the following:

- using in-house safety professionals to provide training
- hiring an outside consultant to provide training
- providing individualized training for specific employees
- providing group training
- providing on-line training for an individual or group of employees
- allowing employees to go outside the organization for training (i.e. local college)
- allowing individual or group self-study training
- providing mentoring or job shadowing

b. Proactive Strategy

It's important that employees receive periodic safety training to ensure they are up-to-date on organizational and industry safety practices and standards. Training can be conducted during new employee orientation, when an employee changes job, when new chemical or tasks are being introduced, as a refresher and/or when an incident occurs. Identifying the type of format for safety training is an important consideration for management to consider. Employees learn best when the training provided is consistent with their preferred mode of learning. At the same time, training initiatives need to be documented, to not only comply with federal and state governmental regulations, but also to protect the company from possible litigation.

6. Safety Concern: Horseplay or inappropriate employee behavior

Sometimes workplace injuries can be the result of horseplay or other types of inappropriate employee behavior. Labor and Industries (L&I) in the state of Washington specifically developed a tool to address this concern during a construction toolbox talk. The tool will basically inform employees that practical jokes often invite danger at their work sites. This document also discusses that horseplay unnecessarily increases the chance of an injury among the building trades industry. It emphases that horseplay benefits no one, and can lead to a build up of resentment and fosters retaliation[22].

a. Application of Creativity Concept/Technique: "What if" technique

Workplace injuries resulting from horseplay or other types of inappropriate employee behavior might be prevented or reduced by using the "what if" technique. For example, while reviewing the organization for possible safety concerns, management can utilize the "what if" technique to discourage inappropriate employee behavior. Management can ask the employees, "what if" employees engage in inappropriate behavior in the workplace, what are some possible consequences? Responses might include:

- the employee engaged in inappropriate behavior might be injured
- the employee engaged in inappropriate behavior might injure co-workers as well as other by-standers
- the employee engaged in inappropriate behavior might be disciplined
- equipment or machinery might be damaged, resulting in downtime
- OSHA investigations may result if an injury occurs, leading to the issuance of safety citations

b. Proactive Strategy

It's important for employees to understand and accept their job responsibilities. They must develop self-discipline and refrain from horseplay and other types of inappropriate behavior. Additionally, proper supervision is essential for ensuring that employees do not engage in inappropriate behavior. Workplace safety rules and policies need to be consistently enforced, including rules concerning inappropriate behavior while on the job.

Conclusion on Safety Concerns and Proactive Strategies

The preceding section of the paper (Safety Concerns and Strategies) helps to illustrate that different safety concerns can sometimes overlap, along with identifying proactive strategies for dealing with them. Consequently, the authors believe that a proactive and multi-facet approach is an effective way to prevent or reduce workplace injuries.

Additionally, it's important for management to understand that creativity is not just about developing new or never before used ideas to solve problems. Creativity can also involve using existing ideas in new ways or implementing ideas that can best solve the problem at hand. In other words, sometimes old ideas can have new uses or have positive results when used in different ways and at different times.

The Role of University Faculty

Faculty can play a major role in preparing students for their future leadership roles, including safety management responsibilities[5]. Creating awareness by the faculty of the various career paths available to engineering and technology students is the first step[1, 2]. In addition to providing students with the technical skills for their respective fields of study, there are many ways that faculty can help to prepare students for workplace safety concerns.

Faculty need to become familiar with the issue of workplace safety in order to identify opportunities to incorporate discussions of safety management into their courses. Fortunately, there are many occasions where faculty can raise the topic of workplace safety. For example, the issue of safety management can be introduced with various class assignments or discussions involving project management, careers in engineering and supervision, teamwork, workplace injuries, employee training, production costs, organizational goal setting, and other topics which might encompass workplace safety.

Some specific ideas for incorporating the discussion of safety management into various engineering and technology courses can include the following.

1. Student Leadership Roles: Instructors can include the topic of safety management into their courses during any discussion about the different leadership roles students will undertake in the corporate world. When discussing future leadership roles of engineering and technology students, instructors can help to make students aware of the importance of preventing employee injuries and how safety affects organizational success.

2. Student Teamwork Assignments: When students are given group assignments that require them to work together, the instructor can use the opportunity to discuss team members' responsibilities in the corporate world, including their role in promoting workplace safety.

3. Other opportunities for instructors to raise the issue of safety management in their courses can include the following:

- For courses involving laboratory work, instructors can raise the issue of workplace safety when discussing appropriate laboratory behavior and the importance of working safely while in the lab. The instructor can speak on past safety concerns in the lab and relate them to safety concerns in the workplace.
- If students are currently employed, a discussion about the products or services offered by their companies can facilitate a discussion of the various safety concerns students encounter in their jobs. A review of the safety practices and policies of their current employers can lead to issues involving workplace safety in different industries.
- While speaking about career opportunities in engineering and technology, instructors can invite guest speakers to talk about workplace safety in general and careers in safety management.
- Instructors can require student research assignments and presentations on work related concerns and/or career challenges, including safety concerns students may encounter in the workplace.
- Experiential learning has become an important agenda in academia. Therefore, instructors can incorporate a discussion of workplace safety as an experiential course assignment/experience. The instructor and students can talk about various workplace safety concerns as examples of real life, work-related experiences.
- Instructors can incorporate multidisciplinary learning into their technical courses and help students learn about other career related issues. For example, the instructor can develop a "current topic assignment" where students are required to research or discuss a non-technical topic related to their careers. When assigning the non-technical topic, the instructor can include the topic of workplace safety.

Conclusion

In today's competitive and dynamic economy, quality leadership is an integral component for not only career success, but also organizational success. As future leaders of business organizations, it's important for students to have an understanding of the various leadership responsibilities, including safety management concerns, they will undertake in the workplace.

Because workplace injuries can significantly effect the entire organization, safety management has become an industry challenge. Through the use of creative problem-solving and a greater understanding of safety practices, companies are discovering that proactive safety practices can reduce workplace injuries while simultaneously maintaining efficiency.

Due to its far reaching effects on the careers of students and success of the organization, safety management is an important topic that faculty need to address. Fortunately, safety management can be integrated into the curricula of most engineering and technology courses.

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