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Teaching or Preaching…
Why Stories Can Improve Safety Training

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Occupational safety and health training can be a challenge. Workers in "high risk" industries can be particularly difficult to train, especially if they have been in their jobs for a long time and believe they, not the trainer, are the experts in how to do the work. For many of these industries, the law requires that workers be trained in the hazards associated with the work, but trainers often have difficulty in connecting with the workers or in convincing them to work safely for their own good and the good of their co-workers. This paper presents some options for trainers to develop training that is both interesting and effective. The author presents several examples of training needs and the solutions that were applied, and discusses the use of stories, both occupational and organizational, to capture the interest and the hearts of workers.

Background

Humans have used stories forever, to entertain, to instruct, to pass on information. When the National Institute for Occupational Safety and Health (NIOSH) funded a small project in the late 1990's to look at developing *effective* training for the mining industry, researchers recognized the power stories had to capture people's interest, and adopted a storytelling framework to create training that was more interesting and credible to the miners. Since the project began, 11 different videos have been developed, all of them using stories to describe hazards and what can happen if these are ignored. The mining industry is more heavily regulated than most blue-collar industries, and federal law, specifically 30 CFR Parts 46 and 48 [10], requires that new workers coming into the industry receive safety and health training before starting work. The law specifies a minimum of 24 hours of "New Miner Training" for new surface miners, and 40 hours for new underground miners. (It should be noted that many companies do not feel that this is enough, and require new employees to spend much longer learning the safety aspects of the job. Task training is not included in this.) It also requires every miner to receive at least 8 hours of "Annual Refresher Training" every year, as well as "Site Specific Hazard Awareness Training" if they move from one mine to another. Few other industries have training standards this strict. While the law can regulate how much time miners spend in training, however, it really can not make them pay attention. This, according to trainers, has been the challenge.

The need for more effective training was identified through a series of stakeholder meetings conducted by the NIOSH Spokane Research Laboratory (SRL) shortly after it moved from the U.S. Bureau of Mines into NIOSH in 1996. Eleven separate facilitated meetings were held in the

West between 1998 and 2005, with participants asked to identify issues or concerns that SRL could help mitigate. The topic of safety and health training was a recurrent theme, with operators and safety specialists alike stating that materials that were available were out of date, boring, or not pertinent. SRL developed a pilot project to address this need, which grew into a seven-year study, and resulted in the development of 11 different training or safety awareness videos. SRL worked collaboratively with industry professionals to identify specific topics and to gain access to the mines and miners needed to make the training realistic and relevant. An informal group of safety trainers from different mines was organized to provide a constant feedback loop, and to assist in the development of training materials. This group acted as technical advisors, but also became gatekeepers to the project and co-creators, to some extent. When a topic was selected for development of a new training product, the group discussed the major problems that should be addressed, the regulations that impacted the topic, accidents and injuries that were related to the area, where the video could be produced, and who might be a good spokesperson for the video. Membership in this group varied according to the topic under consideration, but the members collectively became an invaluable resource to the research team as topics were developed into training.

Developing *effective* training was the goal of the project, but what did that really mean, and what markers would indicate that the goal was achieved? Safety trainers were seen by the NIOSH research team as highly pragmatic. They didn't have the time, experience, or resources to worry about Kirkpatrick's four levels of evaluation to determine program effectiveness [6]. For the training materials to be effective in their eyes, it would need to capture the interest of the workers enough so that the training objectives identified by the mine's individual training plans could be met. This might take the form: *After viewing the training video, trainees will be able to list four signs of instability in the back (roof) of the mine and identify proper steps to control ground control failures*. Trainers also provided feedback stemming from their observation of the trainees viewing the videos, and reported the extent to which the trainees were paying attention. Because miners had openly referred to Annual Refresher Training in the past as "Safety Jail" and had used training time as an opportunity to get a donut, a cup of coffee, and a nap, it should be fairly easy, they reasoned, to see if miners stayed awake and alert. Discussions of the material covered after the video was over would provide further evidence that participants watched and understood the lesson.

Adult Learners

One of the few assumptions made by the research team at the beginning of the project was that the target audience, miners, were all adults. In fact, U.S. law prevented those under the age of 18 from working in mines unless they were owned and operated by their families. An investigation of adult learning theory was a logical starting place for the SRL team. Malcolm Knowles, considered the father of Adult Learning Theory, believes that adults are not just large children, and must therefore be taught in a different fashion [7]. Children often identify themselves primarily as learners, and if asked to describe themselves, will usually include some statement of their educational progress, "I'm nine and I'm in fourth grade now," for example. Adults, on the other hand, rarely define themselves in this fashion, and derive their self image from their experiences rather than their level in school.

Adults in the workplace rarely seek learning for its own sake, but rather to increase competence or skill levels, or to meet organizational requirements. The Mine Safety and Health Administration (MSHA) provides training to its certified safety instructors, and in its guidance to

trainers states “Adults learn best when they feel a need to learn. Most adults are motivated to learn when they see an immediate and direct application of the knowledge or skill. Adults can’t be threatened, coerced, or tricked into learning.” [8] (44) MSHA goes on to explain that adults will be more motivated to learn if they are enjoying the information. It is for this reason that the historical training model, which is teacher-focused according to Kelly [5], should be replaced with a learner-focused model, generally known as “andragogy”, or “adult-learning.” Adults, according to Knowles, bring a high level of personal experience to the training room, and expect to be involved in their training to a much higher degree than children do. If they do not see the relevance or usefulness of training, they most likely will “check out” and not pay attention. For training to be successful with adults, it must be related to problem-solving, not abstract concepts. And adults tend to be self-directed, with a stronger interior locus of control as compared to children, who are far more willing to do what others want them to do and to learn from materials that seem abstract and not immediately relevant. It is this characteristic that makes it difficult to permanently change the behaviors of adults through training. If the change appears to be forced by an exterior locus of control, a supervisor or inspector for example, adults will change their behavior while under observation, but generally go back to “the way we do things around here” when that controlling factor is removed.

So what would *effective* training look like for adults? Trainers must recognize the realities of adult learners, and that motivating them to learn is crucial. Kelly states “If training is required and the learner does not immediately see the benefit, the instructor will have to provide reasons why the training is of value (47)”. Preaching at trainees, or trying to force them to accept training without explaining why simply will not work. Trainers must find the key to convincing participants that it is important that they learn the information, because it could keep them alive. If they fail, trainers might just as well accept the fact that people will put their “seat time” in, but will take away very little from the training.

Learning Styles

An important area of consideration for the NIOSH training development project was the research conducted on individual learning styles or learning preferences. While there are many different models in use that help teachers identify learning styles for students in the classroom, one of the simplest was proposed by Dr. Rita Dunn, who suggested that most learners can be categorized as visual, auditory or kinesthetic/tactual in their preference for gathering and processing new information [3]. Filipczak notes that an “average” group would include 30 to 40 percent visual learners, 20 to 30 percent audio learners, and 30 to 50 percent kinesthetic learners (46). While it is logical that some occupations would be more heavily weighted to one category over the others (musicians, for example, are likely more auditory than visual), a good training session should include visual information, audio information, and a way for learners to become involved in the training. Unfortunately, most traditional training sessions rely heavily on the auditory model, where the trainer lectures and trainees listen. Ideally, trainers would separate the learners into groups and teach each in a way that maximizes their acceptance of the material. However, in an occupational safety and health environment, that is not likely to happen.

How then does a trainer reach each person in a class and accommodate every preferred learning style? Trainers do not have the luxury of unlimited time or resources. Their job is to provide enough information to workers to keep them as safe as possible in the work environment, and hopefully, to convince them of the efficacy of choosing safe behaviors over shortcuts. While U.S. mining law requires trainers to provide a minimum of eight hours of safety training every year, it

is a challenge to reach every worker in that time and to convince them to choose to work safely for the coming year, particularly when the class includes such diversity in learning preferences. In addition, the trainees are all adults who have no control over whether they take the training or not, and who may not believe that it is relevant to their every-day work life. What can a trainer do to overcome these obstacles? Filipczak suggests that there are a few training techniques that are universally well-received, and storytelling is one of these.

The Power of Stories

The mining industry, like other industries described as "high risk," uses stories for many purposes. Miners tell stories to amuse each other, to share information about what is happening in the mine, to introduce new hires to the environment and the many dangers that can harm those who are unaware, as well as to strengthen the occupational culture. Van Maanen and Barley [11] believe that occupations that include hazards not experienced by most workers will have a strong occupational culture, and that this culture provides the guidelines that its members must follow in order to be considered insiders and successful. High risk industries almost always fall into this category. Occupations such as these are very resistant to outsiders, according to Van Maanen and Barley, because it is believed that no one except for an insider can understand or appreciate the dangers that are faced on a daily basis. Members generally have their own "tribal language" that provides insiders a means of communicating with each other about what is important, and that has the added benefit of being nearly unintelligible to outsiders, thus reinforcing the belief that they can not possible understand [4]. Trainers can be viewed as outsiders by miners because they do not go into the mine every day, nor do they do the tasks miners do. Materials that are used in training that are written in technical or bureaucratic jargon are almost guaranteed to be ignored by the trainees, because they are not representative of the culture. Training materials that threaten or seem coercive will be considered preaching, not teaching, and they will not be accepted. Stories, on the other hand, capture the language, the norms, and the hazards of the workplace, and are much more interesting to trainees because they are about other miners; they are both relevant and related to real-life problems that trainees may also have to face.

One of the most important features of stories is the storyteller. For training stories to be effective, the storyteller needs to look, walk, and talk like those who are listening. He or she must be credible and recognized as one who has hard-earned knowledge to share, and who understands the dangers and the environment faced everyday by the listeners. By telling work stories, the expert is not only sharing information, he is sharing the expectations and beliefs, the *norms* of the occupational culture. The stories that are shared generally include information about what happened and what the protagonist did about it, but also about what that person should have done or what could have happened if things had happened just a bit differently. Listeners are drawn into the stories and by placing themselves inside the story, they feel much of what the "hero" was going through and can assess what they might have done in a similar situation, or how they would have responded when the events played out. The story allows them to both think about and respond to the situation; by using both halves of the brain, it is much more likely that the story and its lessons will be remembered. This of course, is one of the primary goals of training: to remember the lessons when the training is over.

Neuhauser suggests that stories access several levels of the brain, which makes them very valuable in a training environment. She states:

> One of the theories for why stories are remembered so well is that you are using your "whole" brain to take in information….Stories allow a person to feel and see the information as well as factually understand it. Because you "hear" the information factually, visually, and emotionally, it is more likely to be imprinted on your brain in a way that it sticks with you longer with very little effort on your part. [9] (4-5)

This is directly relevant to the theories about learning styles. If a classroom is made up of people with different preferences for taking in and processing information, then stories provide something for everyone. A story is, by nature, told and heard, especially by the audio learners. Learners can watch the story as it unfolds, especially if it is presented in video format, which addresses the needs of the visual learners. And if the story is well-told, the participants will be drawn into it, to the point where they will actually experience it. This will catch the attention of the kinesthetic learners.

Stories have a very powerful ability to make important facts interesting, federal safety regulations for example. There is no doubt that these are important to workers, but they are not written in language most people can understand, and are viewed as very dull and boring by most. They are also in the category of "preaching" in that they stipulate what must be done (and the penalties for not doing it) rather than providing any information on why this is necessary. For adults to willingly choose to change their behavior regarding safety, they must be convinced of the importance of doing so, and what these changes can actually mean to their lives. Stories have the ability to turn impersonal statistics (accident/injury data, for instance) into faces—people who look just like they do and who do the same kind of work they do. Cole has researched the value of stories to trainers and concludes that what he terms "narrative thinking" facilitates the process of "translation of one's own and others' experiences into stories that integrate facts, perceptions, emotions, intentions, actions, and consequences into coherent meaning. Storytelling is not the only successful cognitive process for organizing perception, thought, memory, and action but…it is more effective than any other." [1] (331)

Work Stories

During the seven-year course of the training development project, NIOSH team members have captured many stories. These were told by the workers themselves, whether miners or commercial fishermen, and all were told within the backdrop of the occupational culture and its norms. The stories can be categorized as follows:

- Hero Stories—these capture the norms of the culture, with the hero epitomizing all that is "best" in the culture. These are the people who work the hardest, treat their employees the best, are the most productive, have the best safety record, etc.
- Villain Stories—these are also Hero Stories, just told from the opposite perspective. The villain violates the norms, and represents the "worst" side. He is lazy, unsafe, non-productive, selfish, etc.
- Disaster Stories—these generally represent what can happen when things go really wrong. The Sunshine Mine Disaster that killed 91 miners is an example. These stories often include Hero Stories and Villain Stories, but the focus is on the actual event and its consequences.
- Fool Stories—these are the "Near Miss" stories, and are usually told by the person who had the experience. If the storyteller feels safe about telling the tale, these stories share what can happen if someone fails to follow established procedures, or takes a short cut. They include a consequence, and generally, an admonishment for listeners to learn the lesson the easy way

(by paying attention to the story) not the hard way as *they* had to. These are solid gold for trainers…they are told by peers who are credible, and who are willing to share the price they paid for being foolish. These stories epitomize teaching, not preaching, and should be sought out by trainers.

In addition to the stories gathered by the project team, other stories were created by them as a background to share the stories told by the workers themselves. [2] This type of story can use humor or pathos, but is a very effective way to present lessons to trainees in a non-threatening but interesting manner. In fact, the videos created by the team have been very well-received in the industry, and have been used in other occupational industries such as commercial fishing, fire-fighting, etc. Stories, it seems, are interesting even to those who do not work in the occupation represented.

So, where would a safety professional go to find these stories? It's quite simple—the workers themselves tell them everyday. Ask them; they know who the heroes and villains are, as well as who has had a near miss that would make an excellent teaching story. A word of caution: if people are going to be punished for sharing near-misses, they will not share them. The safety trainer must assure the safety for the storyteller and the protagonist of the story if it is someone other than the storyteller. Once the stories are safely shared, it is often the case that others come forward to share their own stories. Training becomes more personalized and meaningful, especially as participants become involved. In this way, safety becomes a "team sport" with everyone focused on a common goal—sending everyone home safely at the end of every shift.

Summary

Safety trainers have a difficult task. Their "students" are not just large children sitting orderly in rows of desks. Rather, they are adults who are, according to Kelly [5] "autonomous and self directed" and who make choices about what they are willing to learn and what they choose to ignore. Trainers must find a way to capture their attention and keep it, and to make training both interesting and relevant. When one considers that any given class also has a mix of audio, visual, and kinesthetic learners, it is imperative that a trainer find ways to meet everyone's needs and to present materials in ways that are accessible to all. Trying to threaten or coerce learners will not work, but gaining their buy-in and their participation will increase learning and retention. Learning for adults must be relevant and pragmatic. If they can not see the value of it, or where it will be used in their lives, they will shut down, preferring to sit in "safety jail" rather than expend any energy on something that has no meaning to them. Trainers must break the traditional mold and find ways to engage and educate. Stories, fortunately, have the power to do this. Stories that are shared by others from the same occupation are particularly powerful in that they use common jargon of the occupation and are told by people who are credible to the listeners. Stories allow listeners to hear, see, and feel, which engages both sides of the brain; and because they are entertaining, stories and the important safety messages imbedded within them are much more likely to be remembered. Training that uses stories and credible storytellers will reach the learners and in the end, will make safety training more meaningful and more effective.

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