

The New Frontier of Safety Training: Going Mobile and Micro

**Dianne R. Stober, Ph.D.
Managing Partner
C Cubed
Fort Collins, CO**

**Stefanie Putter, M.S.
C Cubed Consultant
Fort Collins, CO**

Introduction

How many times have you heard, “we need more training?” While no one would argue that training is unimportant, two of the biggest challenges to organizations are how to make training stick, and how to do more with less. E-learning has been one approach to increasing effectiveness in delivering training. The ability to deliver training outside the traditional classroom has helped with efficiency; however, challenges with sustainability persist within e-learning approaches as well. The next generation of training, “must move beyond courseware and classrooms and into work” (Rosenberg 2006). We need to shift our thinking about training formats, delivery, and how to make it stick. It is becoming clear that the next frontier in learning is both mobile and micro. This paper focuses on where shifts need to happen and provides some new approaches built on solid evidence.

Key Barriers to Traditional Training Effectiveness

We all recognize that traditional approaches to training have some pitfalls. Given that only a fraction of the knowledge and skills presented through traditional training have been found to transfer to the job (Saks 2002, 29-30), it is vital that barriers to effective training be identified. While there are ample opportunities for creating innovative solutions, the first step is to outline what types of barriers presently exist for effective training.

The first category of obstacles associated with traditional training approaches is *tactical barriers*. These can be defined as logistical challenges that make it difficult for trainees to attend and complete training programs:

1. The first tactical barrier associated with traditional training is *the real-time impact on production*. To survive in the current economic climate, many organizations are running

leaner crews and tighter production schedules. As such, pulling out workers for an extended period of time to attend training can be a great challenge, even when organizations want to “do the right thing.” These current organizational realities highlight the need for creative training solutions that allow employees to learn and develop, while still maintaining production flow.

2. The second tactical barrier associated with traditional training is *limited organizational resources*. Training is a huge financial, time, and personnel investment. The American Society for Training and Development (ASTD 2011) points out that, in 2009 alone, U.S. organizations spent approximately \$125 billion dollars on employee learning and development, including training. This figure highlights the value many companies place on employee training. However, increasing economic pressures and fewer organizational resources often means that training budgets are tight, and there is a push to “do more with less.”
3. The third tactical barrier associated with traditional training is the *geographic location of the workforce*. Typically, training occurs in a classroom setting, requiring trainees to be physically present in one location for the duration of a program. Organizations today employ individuals who work in different parts of the company, in different locations around the world, and on different work schedules. Coordinating a time and place for employees to jointly participate in training can be extremely challenging with a traditional training approach.
4. The fourth tactical barrier associated with traditional training is *the transient nature of many workforces*. It is commonplace today, especially in project-based work, for employees to enter and leave an organization on a regular basis. While this is often an economic reality, it becomes difficult to maintain complete knowledge transfer when there is an ever-changing blend of new hires and tenured workers onsite. As such, a traditional training approach is not ideal for organizations with transient worker populations.

These tactical barriers impact how training is logistically delivered and can sometimes drive organizations to make training decisions based on “what is possible” rather than what is required. In terms of safety leadership and safety culture training, we have seen organizations choose to only train certain segments of their organization, generally management, and then rely on those leaders to attempt to pass on what they learned. This means that sometimes those most in harm’s way are left out of training that could help them do their jobs more safely and productively. These decisions can also compound the next type of barriers to be discussed: how training knowledge gets transferred to daily practice.

The second category of obstacles associated with traditional training approaches is *transfer barriers*. Transfer barriers include failure to use and apply the knowledge and skills learned in training after returning to the job. Saks (2002, 29) found that about 40% of trainees fail to transfer learning to practice immediately after training, 70% fail to transfer learning one year after training, and ultimately only 50% of training investments result in actual organizational or individual improvement. We suggest that transfer failures are common in traditional training approaches due to the following barriers:

1. The first transfer barrier associated with traditional training is *lack of relevance/perceived value*. Individuals who feel that the knowledge and skills they are learning in training are relevant to their jobs are more likely to look for opportunities to actually use what they learn at work than trainees who do not see the relevance of the training (Warr and Bunce 1995, 347 et seq.). If trainees believe that a training program will help them perform their jobs better,

they are more likely to transfer the learned knowledge and skills back on the job. It is absolutely critical that the content of a training program is appropriate and relevant for its audience.

2. The second transfer barrier associated with traditional training is *lack of authenticity*. Traditional training programs often take place outside of the work environment, in a classroom-based setting. While it can be valuable to take employees away from their work (and rid them of possible distractions) while going through training, there are downsides to this approach as well. For example, classroom-based training may be too contrived and too removed from the work context for trainees to see the links between what they are learning during training and how to actually use this knowledge on the job. There is need for a more innovative training approach that embeds training into the actual work context, thus decreasing the perceived distance between the training environment and work environment.

Overall, transfer of knowledge and skills from training to the job is the ultimate indicator of training success (Milheim 1994, 95). It is especially important for safety leadership training to transfer back to the workplace. In 2009 alone, there were 3.3 million work-related injuries and illnesses in the U.S. (U.S. BLS 2010). Because occupational incidents have such detrimental consequences for both workers and organizations, it is critical to design safety leadership training that actually results in improved safety performance. Thus, we aim to take a new, innovative approach for facilitating safety leadership training transfer.

Cutting-Edge Solutions

So how do we tackle such formidable barriers? This has been a key challenge for effective training across groups of people, across types of training, and across industries and settings. There are two trends in training that can transform current models for safety training: mobile learning and micro-training. Each of these trends addresses different tactical or transfer barriers and when used together, have the potential to radically change how safety training is provided.

Mobile Learning (M-learning):

Electronic learning (E-learning) has been around for some time with mixed results. The efficiency of being able to deliver training via computers was a big step forward when done well. Where e-learning moved learning away from the classroom, m-learning is moving learning away from a fixed location (Cmuk 2007). The ability to deliver mobile training opens up a whole new frontier for training of all kinds, including safety training. As Quinn (2001, 20) noted in the early days of m-learning, mobile learning takes an e-learning approach and adds two more key features: *mobility* and *ubiquity*. Mobility allows content to be delivered conveniently, feasibly, and immediately, while ubiquity means learners have on-demand learning available, whenever and wherever. (Peng et al., 2009, 171 et seq.).

Truly effective m-learning approaches share some key characteristics (Tucker 2010):

1. *Social Interactivity*: The training supports collaboration, active participation, critical reflection, and real-time interactivity. M-learning that allows participants to interact with each other, and the material can lead to better decision-making and engagement.
2. *Individuality and Context Sensitivity*: The training is customized and personalized such that learners see it as relevant and authentic to their situation.
3. *Portability*: The training is at the fingertips of the user and ready when they are.

4. *Economic Viability*: With newer devices, it is possible to have similar computing capabilities as laptops and computers but for lower cost.

These features are what have revolutionized delivery of information, whether it is a mobile game or a safety training course. The m-learning approach to training tackles key logistical barriers to delivering training on-demand, wherever and whenever. That said, in order for an m-learning approach to be effective for safety training, close attention is needed to the interactivity and relevance components of any safety training delivered in this way. All of us have likely experienced some type of training, whether face to face or electronic, that left us bored, disengaged, and frustrated. Making sure that any training delivered is engaging and relevant remains key, whether mobile or not!

A Micro-training Approach

Another aspect of the new frontier of safety training involves how much content is delivered and when. Micro-training refers to learning and development that takes place over short segments of time. These segments can be delivered via face-to-face, online, or mobile learning training formats. With a foundation on key learning principles, micro-trainings have great potential to boost transfer effects from traditional training approaches.

First, a micro-training approach *supports informal learning* (Marsick and Watkins 1997, 296). Because this type of training is broken up into small segments of information, it is easier to fit into everyday work life, is less disruptive to workflow and production, and can provide a platform for individuals to learn new knowledge within the context of their own work environments.

Secondly, a micro-training approach is *learner-focused*, such that learners (trainees) have some decision-making influence over when (time of day, day of week) they would like to go through the training material, how fast they want to complete the training, and where (onsite, offsite) they would like to complete the training. In order for training to be optimally effective, it must be designed in ways that motivate learners to participate and engage (Brown and Ford 2002, 193-194). A learner-centered micro-training approach can help trainees become more active participants in their own learning and development.

Additionally, a micro-training approach supports active learning through a focus on *spaced learning techniques*, or exposure to small amounts of material spread out over time. This is in contrast to traditional training approaches that are often based on massed learning techniques (learning a lot of information in a short period of time), which can easily lead to information overload. Spaced learning can help increase knowledge retention and absorption capacity, and the superiority of spaced learning techniques versus massed learning techniques has been consistently supported within the learning literature (see Cepeda, et al., 2006, for a review). As each of us probably remembers from school, studying over time is more effective than “cramming” the night before for a test!

Finally, a micro-training approach is based on *adult learning principles*, which state that individuals are more likely to apply training knowledge and skills when they believe the learning content is relevant to their work, is problem-centered versus content-based, and can be immediately applied (Knowles 1990, 61 et seq.). Micro-trainings easily capitalize on these principles. For example, there is evidence that transfer is optimized when aspects of the training and work environments are similar to one another (e.g., Bower 1981, 129 et seq.). With a micro-

training approach, learning can be easily incorporated into everyday work life, ultimately blending together the training and work environments. All in all, a micro-training approach is founded in key learning principles that support learning, skill acquisition, and training transfer.

Going Mobile and Micro

As has been described above, using an m-learning approach to get safety training out of the classroom or away from the computer and into the field or on the shop floor enables safety training to surmount some of the tactical barriers to training throughout an organization. Adding a micro-training approach to mobile learning technology can tackle some of the learning transfer problems that have dogged traditional training formats. Having understood the advantages of this new frontier for training, you may be asking, “What does it take to do this?” What are key considerations for a mobile, micro-training approach?

Case Example

A large mining services provider with a geographically dispersed workforce wanted to provide cognitive safety leadership training throughout its organization. Many tactical barriers had prevented traditional training from being delivered to the workforce in the field and the typical transfer of learning challenges from the classroom to the field were present. A mobile, micro-training approach was chosen to overcome some of these barriers to effective training.

In developing a mobile and micro-training solution, a number of key decision points and features have been important to address:

1. *Mobile, micro-training provided key benefits over traditional training.* Given tactical barriers to taking personnel out of production and the geographically dispersed nature of the workforce, m-learning via mobile devices provided a realistic avenue for training personnel beyond management. A micro-training approach also provided a new way to reduce barriers to transfer learning to practice. Rather than a “data dump” approach, training was designed to be completed in small, manageable sessions incorporated into daily routines.
2. *Key stakeholders and organizational support were engaged.* Senior management needed to see themselves as actively part of the overall approach rather than seeing the training as “for the field only.” Safety personnel were actively engaged in providing specific input into the training content itself to make sure training was relevant and true to various work environments. Beyond contributing to the content of the training, safety personnel were engaged as key support to field personnel using the training and to provide organizational links back to senior management.
3. *Interactivity and relevance were prime considerations.* In order for the training to be effective, it was designed to be interactive and take advantage of mobile device capabilities, rather than being an “information push” that left participants passive and potentially disengaged. Making sure content was representative of the environments and types of situations faced by the workforce supported perceived relevance, active learning, and adult-learning principles.
4. *Mobile training allowed data collection that is often lost in traditional training approaches.* With interactivity an essential part of the design, this approach allows data to be collected about how the training is perceived and used, how participants view their current work environments in terms of safety, and more traditional feedback data.
5. *The user experience drove design.* Making the user interface as easy to use as possible was a prime consideration, and computer literacy was not assumed. Keeping the user firmly in mind

is key. Given that one goal for this type of training is increased interaction and discussion of safety, the training was also designed to support and encourage peer interaction rather than isolated, individual training common in many online learning approaches.

In undertaking a mobile, micro-training approach, taking these points into consideration resulted in training that addresses a number of traditional barriers to effectiveness. Reception by field personnel has been positive as evidenced by the following comment by a participant: “This training is one I’ve done that feels like it is actually for us, rather than for the guys in the corporate office.” When designed well and supported by the organization, such an approach can provide effective safety training and also have positive effects on engagement and culture.

Summary

Safety training faces some of the same hurdles that any training encounters. Traditional training approaches can falter in the face of tactical barriers to training such as geography, transient workforces, limited resources, and real-time impact on production, along with barriers to transferring learning to practice. With the advancement of mobile devices and recognition of potential benefits of breaking training down into smaller “micro-trainings,” safety professionals have the opportunity of pioneering new approaches to training. Anytime, anywhere training is now possible, and combining this possibility with micro-training, using small chunks of information easily applied in the moment, gives safety professionals a new way to engage individuals across an organization.

Key considerations for undertaking a mobile, micro-training approach include: assessing the potential costs and benefits to such an approach; identifying and engaging key stakeholders and sources of organizational support; and designing the training with relevance, interactivity, and the user experience front and center. Safety professionals and organizations are at a new frontier in safety training that holds potential solutions for meeting challenges to training and ultimately can serve as a new route to increasing safety performance and strengthening safety cultures.

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