

Human Resource Development Review

<http://hrd.sagepub.com/>

Training Methods: A Review and Analysis

Barbara Ostrowski Martin, Klodiana Kolomitro and Tony C. M. Lam

Human Resource Development Review 2014 13: 11 originally published online 11

October 2013

DOI: 10.1177/1534484313497947

The online version of this article can be found at:

<http://hrd.sagepub.com/content/13/1/11>

Published by:



<http://www.sagepublications.com>

On behalf of:



[Academy of Human Resource Development](#)

Additional services and information for *Human Resource Development Review* can be found at:

Email Alerts: <http://hrd.sagepub.com/cgi/alerts>

Subscriptions: <http://hrd.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations: <http://hrd.sagepub.com/content/13/1/11.refs.html>

>> [Version of Record](#) - Feb 16, 2014

[OnlineFirst Version of Record](#) - Oct 11, 2013

[What is This?](#)

Training Methods: A Review and Analysis

Human Resource Development Review
2014, Vol. 13(1) 11–35
© 2013 SAGE Publications
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1534484313497947
hrd.sagepub.com



**Barbara Ostrowski Martin¹, Klodiana Kolomitro²,
and Tony C. M. Lam²**

Abstract

In reviewing training methods reported in the literature, 13 were identified: case study, games-based training, internship, job rotation, job shadowing, lecture, mentoring and apprenticeship, programmed instruction, role-modeling, role play, simulation, stimulus-based training, and team-training. The nature and characteristics of these training methods and the relationships among them were analyzed using the following seven criteria: learning modality, learning environment, trainer presence, proximity, interaction level, cost considerations, and time demands. Results from this in-depth review suggest that the majority of training methods are not interactive, involve doing, and are off-the-job. As expected, it also concluded that technological advancements have expanded the delivery mode to various distance options. Profiles for the 13 identified training methods generated from this research should assist practitioners in selecting training methods most suitable for their needs and circumstances and serve as a platform for future research and development.

Keywords

training and development, literature reviews, program planning, human resource education, instructional design

Now more than ever, individuals and organizations must continuously gain knowledge to remain competitive (Sheikh, 2008). The author argues that “[n]ew knowledge may perhaps be the only remaining and one of the most critical sources of competitive

¹Humber Institute of Technology & Advanced Learning, Toronto, Ontario, Canada

²University of Toronto, Ontario, Canada

Corresponding Author:

Barbara Ostrowski Martin, School of Applied Technology, Humber Institute of Technology & Advanced Learning, 205 Humber College Blvd, Toronto, ON, M9W 5L7, Canada.

Email: barbara.martin@humber.ca

advantage available to an organization in the 21st century” (Sheikh, 2008, p. 34). However, training is a very costly investment. Consequently, research and development on training to optimize its effectiveness and efficiency is critical. In *Forbes* magazine, Mary Crane (2006) reported that “the employee-training market may be worth some \$109 billion in the U.S.” As there is no single method to deliver training, trainers continue to search for the best method to present targeted information to trainees. With the ever-changing technological advances of our time and the continual development of learning theories, there are now more options than ever before in how we train people. In this article, we report our findings from an integrative literature review (Callahan, 2010; Torraco, 2005) of training methods. The goal of the review of this mature topic is to take stock of the repertoire of methods that have been used for training, to generate some guidelines for deciding the best way of providing training for a given circumstance, and to enhance communications as well as research and development of training methods. But, before we embark on our journey to understand the different types of training methods, we should first have a clear understanding of what a training method is.

A reasonable place to begin the task of defining training method is to define *training* itself. In most literature associated with training, the term *training* is often assumed to be understood and thus, it is a struggle to actually find a definition of training. In *Train the Trainer: Instructors Guide*, by Ittner and Douds (1997), *training* is defined as

the development and delivery of information that people will use after attending the training. This definition distinguishes “training” from other situations where people are provided with information, but are not necessarily expected to use the information they are given. (pp. 1-4)

In this way, training is different from teaching in K-12 grades or taking courses in postsecondary or continuing education.

Imparting knowledge, abilities, skills, or attitudes (KASAs) to participants involves a process governed by certain strategies. These strategies for imparting KASAs are the *training methods*, which Ampaipatkul (2004) defined as

the methods or activities that a trainer or instructor employ[ed] as a medium to convey knowledge, experience or information to the participants in order to facilitate their learning which might lead them to change their working behaviour and attitudes according to the course objectives. (p. 4)

Deriving from this conceptualization of training, we define a training method as a set of systematic procedures, activities, or techniques that are designed to impart KASAs to the participants that have direct utility in enhancing their job performance. It should be noted that in our definition, we do not require the inclusion of a trainer since some training methods can utilize instruction through sources other than a person.

A term closely akin to training method is training aid. *Training aids* are specific tools used to assist in the delivery of the training content. Bink, Wampler, Dlubac, and Cage (2011) define training aids “as objects or apparatuses that facilitate the learning objectives of training” (p. 1) and offer some of the following examples: flashcards, films and videos demonstrating various tasks, printed materials, whiteboards, and flip charts.

Training is provided within a *training program*. In an organization, needs assessments are conducted to analyze problem areas and to identify potential solution strategies. If the identified need is training, then a training program is developed, which begins with recognition of training needs and methods, leads to training, and subsequently, evaluation (to examine the extent to which the identified needs are met and the problems are resolved).

Our review aims to advance the understanding of methods used in the field of training. Decades ago, the term computer training would have encompassed any kind of training done on computers; the present reality is that the smallest subtleties can denote very significant distinctions. For instance, Webinar and computer-programmed instruction involve computers but are applied quite differently. As training methods is an established topic, our review aims to create a conceptual framework for understanding and for future investigation of methods of training reported in the literature. Such a framework should facilitate communication among training providers and researchers and encourage research and development on training methods. Moreover, it should provide an effective tool that can enhance the likelihood of trainers selecting the methods best suited for a particular training context and goals. In conducting our review, we used the following three questions to guide us:

- What are the various core methods of providing training?
- What are the key characteristics of the identified training methods?
- Under what conditions is each of the identified training methods most suitable?

We recognize that our goal to study training methods can be challenging for the following reasons: (a) training methods are sometimes difficult to define or the label is used to refer to tools, aids, and the like; (b) given the relatively long history of training methods, providing a comprehensive list of types of training methods is problematic; and (c) training methods are rapidly changing to reflect the current technological advances, making it difficult to categorize definitively.

Procedure for Exploring Training Methods

We reviewed, analyzed, and synthesized the training literature to answer the aforementioned research questions. We aimed for an integrative literature review (Torraco, 2005). Electronic databases used in our literature search included ProQuest, ERIC, PsycInfo, and ABI/Inform. Electronic journals were accessed through

Table 1. An Overview of Systems for Categorizing Training Methods.

Source	Categories
Occupational Health and Safety Canada, 1995	Instructor-driven training, work-driven instruction, and learner-driven instruction
de Jong, Thijssen, & Versloot, 2001	Job instruction, apprenticeship, inquiry, and self-evaluation
Simmonds, 2003	Imitation, thinking, being told, and trial and error
Woodall & Winstanley, 1998 (as cited in Simmonds, 2003)	Learning from another person, learning from tasks, and learning with other
Heneman, Schwab, Fossum, & Dyer, 1989	Off-the-job training: information presentation, information processing, and simulation
Hackett, 2007	Trainer-centered, learner-centered, and coaching

Interscience/Wiley, Scholars Portal, JSTOR, and ScienceDirect. In an effort to focus our search, articles were only selected if published after 1979. Only when the identified sources cited training methods published prior to 1980, were the original sources accessed. Books were searched using an internal electronic search engine at a major university in Canada and online book purchasing catalogs: www.chapters.indigo.ca and www.amazon.com. For all searches, the advanced search feature was used and two or more keyword searches were performed simultaneously to identify core training methods (i.e., training method* and type*). As the field of training methods is a mature one and this topic long-standing, the initial search yielded more than 2,000 sources. Next we eliminated nonrefereed articles or books that did not use scholarly references. After excluding from the remaining publications those that either did not describe a training method or describe redundant training methods, we were able to narrow down the number of remaining articles and books to fewer than 500. Finally, we selected 94 sources that provided clear, detailed, and new information related to the training methods as the data pool for our review and analysis. It should be noted that the vast majority of these sources was originated from the United States. We found that very few pieces of training-related literature compare a broad range of training methods; our desire is to explore core training methods and compare them in such a way that the reader would be able to make decisions as to which method is most suitable under certain conditions. In an effort to create a thorough and useful system for comparing the training methods that we identified, we consulted the literature on systems for classifying training methods. To ensure that our search was broad enough to encompass related classification systems, we also included “learning methods” in our literature review. A summary of our findings is presented in Table 1.

After reviewing these existing classification systems, we discovered that none of them were able to achieve our goals; to this end, we developed our own framework with the goal that ours would: (a) serve as a means of understanding the training methods we identified, and (b) serve as a selection tool.

Core Training Methods

Instead of selecting or predetermining a classification system and then deducing how the training methods fit in the system, we took the reverse approach by first compiling a comprehensive list of training methods; this was done by noting the procedures used for training and the labels used for these procedures.

We identified 13 core methods (arranged alphabetically): case study, games-based training, internship, job rotation, job shadowing, lecture, mentoring and apprenticeship, programmed instruction, role-modeling, role play, simulation, stimulus-based training, and team-training. We believe that these 13 methods constitute an exhaustive list of training methods and that any training methods not included on the list are mere extensions or subcategories. Table 2 provides an overview of these 13 training methods. For each method, we provide a definition, examples of its use (as reported in the literature), and literature references that were used to help us define and provide an example of that particular method.

Torraco (2005) specifies that when presenting a framework it is necessary to supply an explanation of its conceptual foundations, its interrelationships, and the conceptual reasoning used to create it. Therefore, we begin our task of systematically comparing the 13 training methods with an account of how we arrived at this framework of analysis and justification for how we describe each training method within our system.

Key Characteristics of the Core Training Methods

As mentioned above, we reviewed the literature on systems of classifying training methods (see Table 1) and concluded that for helping practitioners select training methods these systems, or generally, grouping training methods into different types are not as useful as identifying, analyzing, and comparing specific training methods. Consequently, we looked for a common set of criteria to guide our analysis of the training methods. In this effort, we looked to the existing classification systems we reviewed for variables that these systems used to group training methods. On the basis of relevance to all the training methods and value to the training design, the seven criteria we identified are: learning modality, training environment, trainer presence, proximity, interaction level, cost considerations, and time demands. Each of these criteria represents a dimension that can be used to classify training methods. For example, we can group training methods according to their learning modality: methods based on seeing, hearing, or doing.

Criteria for Comparing Training Methods

Our criteria are considerations that a trainer may wish to take into account when choosing training methods. The use of these criteria creates a profile for each training method centered on these considerations. Based on these criteria, the training methods can be compared against one another, resulting in a guide for selecting training methods. To this end, we will explain the criteria; it is up to the reader to utilize this guide

Table 2. An Overview of the 13 Core Training Methods.

Training method	Definition	Example	References
Case study	Provides the participants an opportunity to develop skills by presenting a problem, <i>without</i> a solution, for them to solve, or <i>with</i> a solution, as an exemplar of how to solve it.	Used in training law students, where students learn about past legal cases and the judicial decisions that resulted (with a solution) A bank administration course has students select a bank from a list, then they are given a hypothetical situation and are asked to apply their financial analysis to the situation (without a solution)	Bruner, Gup, Nunnally, & Pettit, 1999; Elam & Spotts, 2004; Menkel-Meadow, 2000
Games-based training	Trainees compete in a series of decision-making tasks which allows them to explore a variety of strategic alternatives and experience the consequences which affect the other players, but with without risk to the individuals or the organization.	The hit American reality TV show <i>The Apprentice</i> has contestants work in teams that compete against one another in business-related tasks and each week a contestant is "fired," leaving only one winner at the end	Brown, 2004; Gentry, 1990
Internship	Involves supervised, practical training while on the job where the trainee is permitted to work in the position for which they are training, but with some restrictions and with substantially less pay or no pay.	The successful completion of a 1-year internship is required of all clinical and counseling psychology students in the United States; this internship is supervised by an experienced psychologist and is overseen by the Association of Psychology Postdoctoral and Internship Centers	Ballard & Carroll, 2005; Stedman, 1997
Job rotation	Involves training for a job by working in the job for a limited duration, while still maintaining the original job.	At Ingram Micro. participating employees rotate their jobs between five different process areas so that at the end of the program they can perform in all of the company's five distribution centers	Barbian, 2002; Ho, Chang, Shih, & Liang, 2009; Wilson, 2000
Job shadowing	Involves a trainee closely observing someone perform a specific job in the natural job environment for the purpose of witnessing first-hand the details of the job.	Choice Hotels International in Silver Spring, Maryland, USA, offers staff at all levels the opportunity to job shadow for a day in one of their franchised hotels to experience what it is like to be a hotel operator	Tyler, 2008
Lecture	Involves the dissemination of training material by a trainer to a group of trainees, by means of verbal instruction.	The Interactive E-classroom allows students to watch and listen to the lecture presented by the course instructor, while automatically being shown the corresponding slides and/or lecture notes on a single web interface	Zhang, Zhao, Zhou, & Nunamaker, 2004
Mentoring and apprenticeship	Involves a one-on-one partnership between a novice employee with a senior employee. Mentorship aims to provide support and guidance to less experienced employees whereas apprenticeship is for the development of job skills.	The Organizational Development & Learning Centre at the University of Toronto offers mentoring programs of a 12-month duration, which partner staff with more senior university leaders to assist them in enhancing their job skills and their university experience	Andrews & Chilton, 2000; http://www.odlc.utoronto.ca/mentoring

(continued)

Table 2. (continued)

Training method	Definition	Example	References
Programmed instruction	Involves the delivery of training through instruction that is delivered by a program via some electronic device <i>without</i> the presence of an instructor; the electronic device can be a computer, DVD player, CD player, etc.	In pronunciation training using a computer program with a built-in automatic speech recognition component, provides automatic feedback to trainees at the word and sentence level	Gist, Rosen, & Schwoerer, 2006; Neri, Mich, Gerosa, & Giuliani, 2008; Russ-Eft, 2002
Role-modeling	Involves the live presentation of skill(s) to an audience of trainees.	A Wheelchair Skills Training Program developed to train users of manual wheelchairs to attain the important but dangerous and difficult skill of curb climbing	Kirby, Bennett, Smith, Parker, & Thompson, 2008; Verma & Singh, 2010; Wang & Hsu, 2008
Role play	Requires trainees to assume a character and act out the role in a make-believe scenario or series of scenarios; learning comes by way of reflection on the play.	Reference assistants training at a library, has the trainees play out scenarios which are then followed by a trainer-led discussion	Sheets, 1998
Simulation	Involves the use of a simulator where specific skills are developed through repeated practice with a multisensory experience of imitated conditions. A special form of simulation training is Virtual Reality Training which entails total sensory immersion.	The Harvey Simulator is a life-sized mannequin that can simulate 27 different cardiac conditions, enables trainees to perform various physical tests, including blood pressure, pulses, impulses, and respiration, to train on diagnostic skills	Kneebone, 2003
Stimulus-based training	Using some type of stimulus (i.e., music, works of art, narratives, etc.) to motivate the learner to learn. The training induces a state of being (e.g., relaxation or awareness) in the participants to achieve learning.	The use of music to eliminate or lessen failure cues and to induce a state of relaxation or success cues in students to promote learning of mathematics	Lam, Kolomitro, & Alamparambil, 2011; Kumagai, 2008; Zemke, 1995
Team-training	Intended exclusively for groups of individuals that behave interactively, to either improve mutual knowledge within a team or to train the team on a team-specific skill.	An exercise which has each team member write opinions to a prompt question, then come to team consensus	Wheelan, 2005; Craig, 1996

and, along with an understanding of their unique circumstances, judge which method(s) are best suited for their situation. The scales that we used for the interaction level, cost considerations, and time demands criteria are ordinal scales of measurement, the other four are nominal scales (see Table 3).

Learning modality. Learning modality refers to the method of communication by which training content is conveyed to the learners. The three learning modalities are: learning by doing, learning by seeing, and learning by hearing. When trying to create a meaningful grouping system for training methods, we considered the sensorial nature of

Table 3. A Comparison of the Identified Training Methods Based on the Seven Criteria.

Method	Learning modality	Training environment	Trainer presence	Proximity	Interaction level (minimally)	Cost considerations	Time demands
Case study	Doing	Contrived	Yes	Face to face or distance	Variable	Low	Moderate
Games	Doing	Contrived	Yes	Face to face or distance	Interactive	Moderate	High
Internship	Doing	Natural	Yes	Face to face	Somewhat interactive	Low	High
Job rotation	Doing	Natural	n/a	Face to face	Not interactive	n/a	n/a
Job shadowing	Seeing	Natural	Yes	Face to face	Not interactive	Low	Low
Lecture	Hearing	Contrived	Yes	Face to face or distance	Not interactive	Moderate	Low
Mentorship and apprenticeship	Doing	Natural	Yes	Face to face or distance	Somewhat interactive	Low	Moderate
Programmed instruction	Seeing	Contrived	No	Distance	Not interactive	Moderate	Low
Role-modeling	Seeing	Simulated	Yes	Face to face or distance	Not interactive	Moderate	Low
Role play	Doing	Simulated	Yes	Face to face	Interactive	Low	Low
Simulation	Doing	Simulated	No	Face to face	Not interactive	High	Moderate
Stimulus-based	Variable	Simulated	Yes	Face to face	Somewhat interactive	Moderate	Low
Team	Doing	Contrived	Yes	Face to face or distance	Interactive	Moderate	Low

each method, and we noticed a pattern (seeing, hearing, and doing). While some methods can have two or more of these characteristics we readily agreed that each one had at least a primary nature. Furthermore, we noticed that some methods, like lecture, for example, inherently had only one. *Learning by doing* refers to situations where the trainees acquire training content through the action of performing the task. Learning by doing is aligned with the educational philosophy referred to as experiential education, which asserts that learning comes by way of the transformation of experience (Kolb & Kolb, 2005). To that point, Roger Schank (1996) suggested that “we need to transform all training and education so that it looks, feels, and is like doing” (p. 300).

Lujan and DiCarlo (2006) speak to the importance of identifying “the learners’ preferred mode of learning in terms of the sensory modality by which they prefer to take in new information” (p. 13) when considering instructional approach. They identify the following sensory modalities: visual, auditory, and kinesthetic. Similarly, we characterize the training methods by their sensorial approach and instead use the terms *learning by seeing* to refer to cases where the trainees acquire the training content by watching the task being performed, and *learning by hearing* for the acquisition of training content by hearing.

Training environment. The training environment refers to the setting in which the training takes place. A *natural environment* refers to the real work environment. A *contrived environment* refers to a training environment that is created specifically for the training and does not resemble the work environment, whereas a *simulated environment* is contrived but aims to simulate the natural work environment. Therefore, for the training environment criterion we have three possibilities: natural, contrived, and simulated. All on-the-job training takes place in a natural environment whereas off-the-job training can be either contrived or simulated.

Trainer presence. Trainer presence refers to whether the method necessitates delivery through a trainer or through some other source (e.g., computer). Klein, Noe, and Wang (2006) support this notion stating that “the ‘instructor’ may be a person or instruction may be delivered without any human interaction using . . . other instructional media” (p. 666). The presence of a trainer is an important criterion when considering what training method to use because technology is enabling more and more training content to be delivered without a trainer.

Proximity. Proximity refers to the locality of the trainer and trainees. In this case, the training can occur face-to-face or at a distance (in other words, remotely). As Van Noord and Peterson (2010) argue, “[o]nline learning is no longer a novelty—it is now an accepted, even expected, component of professional development” (p. 1). Distance learning no longer refers to the, now antiquated, practice of correspondence training; technology is making it feasible for many training methods to be delivered remotely. It is important to consider proximity in our analysis of training methods because knowledge sharing, like most things these days, is impacted by globalization. While there was a time when social experience reflected only the face-to-face perspective,

technology is likewise enabling distance training to be a social experience and is removing the spatial boundaries that were previously barriers to participation.

Interaction level. Interaction level refers to the relative amount of interaction between trainer and trainee and among trainees. Learning is widely believed to be a socio-cultural experience necessitating social interaction to achieve effective [professional] learning (Webster-Wright, 2009). We used a basic scale to describe the degree of interaction expected in each training method: interactive, somewhat interactive, and not interactive. An exception to note is with the case study method, which we rate as variable. With the case study training method, where trainees are required to independently read and retain information from a given case study, the degree of interaction is *somewhat interactive*. However, where trainees are instructed to engage in a group discussion and devise a group solution about a case study, the interaction level is decidedly *interactive*. In all other cases, we apply a judgment to describe its interaction level. Two factors are considered in this judgment: the likelihood of interaction between the trainer and trainee(s) and the likelihood of interaction among the trainees. Put another way, interactive = likely trainer and trainee interaction AND likely among-trainee interaction, somewhat interactive = likely trainer and trainee interaction OR likely among-trainee interaction, and not interactive = unlikely trainer and trainee interaction AND unlikely among-trainee interaction.

Cost considerations. The criterion of cost considerations identifies what are the most significant expenditures associated with each particular training method, as well as whether the expenses are initial or ongoing. Cost considerations were identified as either low, moderate, or high. A low descriptor involves those methods where the only specific training costs are the cost of the trainer, a moderate descriptor involves methods where the cost of a training space is required in addition to the cost of the trainer, and high involves trainer and equipment costs (including equipment purchase/rental, maintenance, and upgrades). It is important to note that to provide empirical data on the cost of each method would be futile, as there are so many variables at play. Therefore, the best that we can do is to provide a way of comparison. Furthermore, common factors such as the expense of possible employee error were not considered because this could arguably be a common factor across all the training methods.

Time demands. Time demands refers to the time commitment required of the trainees. This is an important consideration because the duration can impact trainee and organizational buy-in. This criterion addresses considerations of whether the training method requires ongoing participation or not, and whether the time spent participating in the training is flexible or fixed.

For the purposes of our analysis, we assigned the following levels with respect to time demands; low, moderate, and high. The outcomes are as follows: low = fixed + singular, moderate = fixed + ongoing OR unspecified + singular, and high = unspecified + ongoing.

Training Methods Comparison Results

In Table 3, we present results from our analysis of each of the 13 core training methods based on the seven aforementioned criteria. This provides a profile of each training method.

Our analysis reveals some trends with respect to training methods. A majority of training methods are off-the-job (69%). A greater number of training methods involve the learning modality of doing (62%) when compared with the learning modalities of seeing or hearing. Technological advancements have made it possible for some training methods (46%) to be offered face-to-face as well as in a distance option. With regard to the level of interaction, “not interactive” was the most frequent (50%). A majority of training methods (85%) fall among the low to moderate range with regard to associated cost, with only one method having greater cost considerations and one with negligible cost considerations. These higher cost considerations are due to the cost associated with purchasing, maintaining, and upgrading specialized equipment required by the simulation training. A majority (54%) of training methods fall in the low rating with respect to time demands, with only two in the high rating.

When Should We Use Which Methods

With regard to the seven criteria that we used to present the profiles for the 13 training methods as discussed in the previous section, we expect the trainers to choose the most suitable method, according to the seven criteria, based on their unique circumstances. In this section, we will explain some of the advantages and disadvantages pertaining to each criterion to assist trainers in utilizing these criteria in their decision process. We will also provide an example on how to perform the selection procedure.

Learning Modality

Although it would be more time and resource demanding, training practitioners would be remiss to ignore the value of considering the learning preferences or cognitive styles of learners to maximize the effectiveness of transfer of learning. A study examining the interaction between trainees' cognitive factors and lecture and case study training methods revealed that higher *verbal comprehension* ability trainees achieve higher posttest scores in training using the *lecture* method than *case study* method (Carter, 2002). These findings suggest that it is useful to match training methods with trainee learning styles to motivate and facilitate learning. It would be extremely challenging and beyond the resource limitations of most training programs to customize training to each learner; however, we contend that practitioners should document the learning preferences of the trainees through self-reporting, and try to be aware and make thoughtful choices in their selection. With regard to the training of medical students Lujan and DiCarlo (2006) express that “. . . it is the responsibility of the instructor to address this diversity of learning styles among students and develop appropriate

learning approaches” (p. 13). To this end they utilize a questionnaire to determine the preferred sensory modality of each student: visual, auditory, or kinesthetic. This type of background questionnaire could be used to help practitioners narrow their choice of training methods by selecting the method that matches the primary preferred sensory modality of the trainees as determined by the trainees’ responses to the questionnaire. In this article, we characterize training methods by their dominant learning modality.

Training Environment

In her article “Reframing Professional Development Through Understanding Authentic Professional Learning,” Ann Webster-Wright (2009) examines how professionals learn. Included in this is the element of authentic work experiences and the “lived experience” (p. 706) of professional learning. Learning in the natural environment is the most ideal, thus on-the-job training methods are generally the most desirable. We propose that the desirability of learning environment (from most to least) is: the natural environment, then the simulated environment, and lastly the contrived environment. There are, however, some stipulations to consider. Problem behavior can be minimized in controlled settings, the most controlled setting being a contrived environment. These recommendations were cited with regard to the treatment of persons whose problem behavior poses undue danger to themselves or others (Tiger, Hanley, & Bruzek, 2008) but can also be extended to include dangerous training situations such as competitive combat like martial arts. High-stakes training such as warfare training, pilot training, or surgical training will naturally be most desirable in a simulated environment, where danger can be mitigated while still providing some degree of a “practice environment.” Another consideration is with respect to the number of trainees. A single trainee may be most cost-effectively and time-effectively trained in a natural environment. However, this might not be feasible for a large cohort of trainees.

Trainer Presence

The presence of a trainer provides the opportunity for the trainer to monitor the progress of the trainees and adjust the process as needed. This is especially advantageous when the training content is complex. Despite the sophistication of some human-generated technologically delivered programs, it is reasonable to expect that a trainer would have a greater aptitude for regulating the training program spontaneously where needed. The presence of a trainer can also impact the motivation of the trainees (Klein et al., 2006); some personalities may need the presence of another to motivate their participation in a training session.

Proximity

Distance education enables the trainer to deliver instruction to large groups of geographically dispersed participants, removing the spatial barriers of face-to-face

delivery. However, interaction level is typically more limited with distance delivery. Trainees' learning through distance training may be more distracted than they would otherwise be if they were face-to-face; this can create a further challenge for distance delivery regarding the ability of the trainer to monitor learning and impact motivation. Moreover, learning can, at times, be ineffective, frustrating, and less satisfactory if the content of the training is not properly designed for this mode or when social interaction is lacking (Richardson & Swan, 2003; Scott, 2010). Fortunately, current developments in distance learning have provided a variety of options to enable greater flexibility in this forum. For example, Realgame is a computer-based business game that allows participants to play remotely and includes instantaneous feedback from an interactive online mode (Lainema & Nurmi, 2003). Telementoring is a tool that allows experts to train and give feedback at a distance. A study about surgical skill training concluded that telementoring can effectively micromanage technical maneuvers and can positively impact proficiency of trainees (Tsuda et al., 2008). Traditional mentoring can also be accessed in a virtual arena, and is commended for the following benefits: accessibility, anonymity (may be more likely to discuss sensitive issues), flexibility, easier to find mentors suited to particular needs (e.g., female mentors or mentors who identify themselves as minorities; Knouse, 2001). Virtual team-training has proven to be a beneficial option for training teams in remote areas (Forbush & Morgan, 2004).

Overall, distance delivery is an advantageous option for learners who live in remote areas, who are self-motivated, have good self-discipline, appreciate the freedom and flexibility of distance education, and are not intimidated by technology (Zhang, Zhao, Zhou, & Nunamaker, 2004).

Interaction Level

Interaction is advantageous and the greater the interaction, the more gainful it is to the learner. This is especially true for complex training content as interaction allows opportunity for the trainees to ask questions and obtain clarification and immediate feedback on their knowledge acquisition. Face-to-face social interaction motivates the learners (Russ-Eft, 2002) and enables them to discuss, share insights, and collaborate (Scott, 2010). In most cases, interaction is desirable but the trainer needs to allocate time during training for those interactions to occur.

Cost Considerations

While nearly all methods involve the cost of the trainer, those that don't have a trainer have the cost of the equipment to consider (i.e., programmed instruction and simulation). Similarly, training methods that are off-the-job and are face-to-face may involve the cost of the learning facility, while distance methods will not require a facility but will require equipment. Regardless of how the money is spent, methods that can reduce the costs of the training are generally much more desirable.

Time Demands

Some training methods have fixed time demands, while with some methods, a trainer may be able to let the trainees decide how much time they spend participating in the training. The longer the time commitment, the less desirable is the training method. Salas, Wildman, and Piccolo (2009) promote simulation as having the ability to “collapse time and space” (p. 561) thereby being advantageous despite its cost. As with cost, the exception to this is where the stakes are high; in this case, it can be advantageous and desirable to use a training method that has higher time demands.

To demonstrate how to use the classification system, we have provided a step-by-step example herein. A large-sized college plans to roll out an organization-wide human rights training program. The staff consists of full-time and part-time faculty, administrative staff, as well as support staff, numbering over 1,500 individuals in total. The Human Resources Department must ensure that every single employee receives the training. Given the sensitive nature of the training content, the training program development team determines that a trainer should be present so as to monitor progress, give instantaneous feedback, respond to reactions, and adjust the training when needed. In consideration of the large number of individuals that need to receive the training and to ensure that school schedules and student support services are not disrupted, it is necessary that the training be replicated numerous times. Therefore, it should have low time demands. The college is a publicly funded institution; therefore, the budget for such an endeavor is limited, making cost considerations an important factor. As an institute of higher learning, the college believes that learning is best achieved through an experiential, social, interactive approach. To recap, given these particular circumstances, the department decides that they want to use a method that has low cost, low time demands, that is interactive, is learning by doing, and has a trainer present. Using Table 3, it becomes apparent that the training method that achieves these identified characteristics is role play.

We also wish to point out that combining methods within a single training program is beneficial for multiple reasons. It can help to appeal to a range of learning styles and, therefore, also improve motivation to learn. Moreover, it can help diminish the irritation around the training that requires high time demands (by mitigating boredom). Combining methods is often not only the preferred mode of receiving information (Lujan & DiCarlo, 2006), but research has found that it results in more complex mental models (Nadkarni, 2003).

We have provided an overview of some of the advantages and disadvantages of each criterion; next, on the basis of the seven criteria we will report some of the advantages and disadvantages of each of the 13 training method we identified.

Case Study

The applied nature of the case study method may serve to enhance trainee interest and, therefore, positively impact learner motivation. However, if the accessibility of necessary resources proves to be a challenge for the learners, it could hinder their motivation and learning (Johnson & Helms, 2008). In his paper, Kirti Shivakumar (2012)

offers the development of decision-making skills, improved communication and interpersonal skills, and strengthened analytical skills as some of the advantages to the case study method. This method is suited for the situation where the learners have some prerequisite knowledge but could benefit from the applied nature of the training. This is a low-risk, low-cost training method, capable of training any number of learners simultaneously and, as such, it has been a popular choice for training students in law, medicine, and counseling. For example, dozens of law students can be trained simultaneously on a true-to-life case (Menkel-Meadow, 2000) by assessing the many perspectives and permutations of a case, without the risk of losing a real legal case.

Games-Based Training

The popularity of games for training purposes has increased over the past decade as games offer a low-cost, yet effective alternative to training (Wilson et al., 2009). The games-based training method is competitive, which can be a motivating feature for the majority of learners. Similar to the case study method, the content is also applied, which can further serve to motivate learners. Some disadvantages of this method are the inability to know what components of the game contribute to the training (Wilson et al., 2009) and the difficulty for the trainer to ensure that all key learning concepts are transmitted through this method.

In a literature review of studies involving the effectiveness of business games, Faria (2001) demonstrates that player personality characteristics, player academic ability, and team characteristics (such as motivation and cohesion) can all be correlated to performance in business games. It is important to note that business is, by its nature, a competitive field and it is likely to attract individuals that thrive in a competitive environment. Consequently, we would recommend games-based training for learners that thrive in or are motivated by a competitive environment; business, military, and sports professionals are all likely to fit this category of learner.

Internship

The major advantages of this method are that the employer can train an employee at a fraction of, or no cost at all, and that the employee actually gets the opportunity to work in the role that they are training to fill; thus, the training content is relevant to their future job responsibility. On the other hand, however, the training experience for the learners can be inconsistent and high-pressured. A survey designed to gauge the reaction measures of practicing physicians a few years after they had completed their medical internship revealed largely unfavorable reactions, specifically, reporting that the experience was too variable, too fragmented, and help in acquiring skills was lacking (Löwe et al., 2008).

We feel that internship is relevant for situations where the training content is best suited to the learning modality of doing and where the learners have the extensive prerequisite knowledge to overcome the variable, fragmented, and unsupportive nature of this method. It may also be well suited to a situation where financial investment of

the employer to training is limited, either because there are a high number of trainees participating or because the employer cannot afford to pay for other, highly time-consuming, and more structured training.

Job Rotation

One of the most significant advantages of this method is that it can promote greater interest in the company and enhance the employee commitment to the company. It offers employees opportunities for development and promotion, which can also improve career satisfaction, motivation, and interdepartmental co-operation (Geet & Deshpande, 2008). Job rotation is beneficial to the organization as it “helps develop a common culture because of wide and common exposure and at the same time infuses ‘fresh blood’ in tasks” giving employees “a fresh challenge and opportunity to prove themselves” (Saiyadain, 2009, p. 409).

A concern that comes with job rotation is the possibility of failing in front of one’s colleagues; failing on the job can feel like a very public type of failure and can damage one’s reputation at work. Moreover, quite often this training method causes disruption because it requires the employees to adjust to the new member of the group with every rotation of job (Geet & Deshpande, 2008). Despite the notion that job rotation does not cost the company any money in the way of extra salary, there are costs associated with the learning curve on new jobs, including time spent learning, training costs, and errors that employees make while learning a new job. We would like to rebut this with the consideration that the time required to recruit, hire, and train new employees would likely supersede the “learning curve” of existing employees.

Ultimately, our recommendation for job rotation is for a situation where the learner already has the background knowledge and aptitude to perform the role successfully, so as to minimize the chance of public failure.

Job Shadowing

Job shadowing can be useful as a method to generate employee interest and engagement. As Kathryn Tyler points out, it is an ideal way for employees to gain new perspectives on a company and even “shop” for different roles within the company. While the primary purpose of job shadowing is for the trainee to learn to perform a specific job, Tyler (2008) demonstrates that trainees get the unique opportunity to view the company from a different perspective, which may give them a broader view of the company. We recommend job shadowing for situations where a company is training existing employees for a new role in the company, or giving existing employees a chance to “try on” a new role (without the risk and cost of failure associated with job rotation).

Lecture

Even though “lectures are probably the most ridiculed training technique” (Thiagarajan, 2005, p. 1), the lecture method is a widely used training method mainly because it can

accommodate a wide range of audience sizes, takes less time to design, offers ease in revising the content, and gives the company and trainer assurance that the trainees complete the training. Thiagarajan's (2005) main criticism of the lecture method is the lack of interaction because it implies a one-way communication and a lack of support to overcome learning challenges and engage in peer learning. The professional development literature advocates learning that is continuing, active, experiential, social, and has relevance to practice (Webster-Wright, 2009). In contrast, the lecture method is finite, passive, not social, and disconnected from real practice, resulting in less than optimal learning. Consequently, we feel that lecture should only be used in cases where the training content is simple, where standardized learning is desired, and where there is no high-stakes consequence should the trainees fail to acquire the target knowledge.

Mentoring and Apprenticeship

A key advantage of this method is the one-on-one learning environment. It would be hard to imagine a learner that would not benefit from this learning structure unless there was interpersonal conflict between the mentor and trainee. Mentorship serves the trainee in two important ways: psychosocial support (acceptance, confidence, buffer against burnout, and the like) and career facilitation (Zerzan, Hess, Schur, Phillips, & Rigotti, 2009). Research suggests that those who are mentored are more willing to become mentors (Vincent & Seymour, 1994). With this in mind it is reasonable to consider the mentorship training method as having the ability to provide long-term gains.

This method is best suited, for example, in a situation where a company wants to groom its trainee(s) for growth within the company. To combat the possible negative impact that can arise from interpersonal conflict, it is imperative that mentor and trainee be carefully prepared (this could include having participants complete questionnaires and allowing trainees to be involved in the selection process; Andrews & Chilton, 2000). Furthermore, support for the mentors by way of training them on communication, encouragement, and leadership skills could also greatly contribute to the success of this training method.

Programmed Instruction

There are many advantages in using programmed instruction as a training method. It is flexible and allows for repeated practice, its consistent delivery means that the learning experience is standardized, and it also has the ability to offer multisensory features (color, sound, text, animation, graphics, and special effects). On the flip side, learner motivation can be negatively affected if the learners are unfamiliar with the technology or are generally intimidated by technology (Zhang et al., 2004). Furthermore, the necessity for specialized equipment creates the opportunity for disruption in learning should technical difficulties arise. Other notable disadvantages are that it demands greater self-discipline than with most other methods, and that there is the possibility that trainees may cheat on or skip parts of the training.

Stanisavljevic and Djuric (2013) performed a comparative evaluation of lecture and computer-programmed instruction effectiveness. One group was presented the course content through programmed instruction, and the other group was presented the same content through the traditional lecturing model. They found that programmed instruction was more effective in terms of quantity and quality of knowledge acquired by learners. The two methods compared involve different modalities of learning, which means that a trainee's learning style may be a useful consideration when selecting this method.

We recommend programmed instruction for use as a training method in cases where the trainees have a reasonable level of comfort using the required equipment, where the trainees will appreciate the flexibility of being able to participate in the training at a time and pace convenient for them, and where the content is not so critical that skipping parts or cheating could have major negative consequences. CPR training would be a good match for programmed instruction. While performing CPR can also mean the difference between life and death, with CPR the adage that "any attempt is better than no attempt" applies. The flexibility of programmed instruction could serve to motivate more people to learn CPR and even if they skip over parts, some knowledge is more advantageous than none (Todd, Heron, & Thompson, 1999). It must be noted, however, that professionals for whom CPR knowledge and ability is foundational to their job (i.e., life guards, paramedics, and other medical practitioners) should not learn life-saving skills through programmed instruction alone.

Role-Modeling

Like its counterpart the lecture method, role-modeling is a popular training method and it allows organizations to readily control trainee completion of the training program. As with the lecture method, there is no expectation of interaction suggesting a lack of support for learners to overcome challenges.

Assaf, Cummings, Graham, Mettlin, and Marshall (1985) reported favorable skill performance outcomes for the role-modeling training method where participants witnessed a demonstration and were given the chance to practice on a life-like model. They compared three methods of teaching women how to perform breast self-examination. It is unclear whether the opportunity to practice on the model factored into the successful outcomes, but it does suggest that role-modeling, combined with the opportunity for the trainee to practice what was modeled, can be a useful combination. Consequently, we feel that role-modeling should be used in cases where trainees can have the chance to practice the skill soon after seeing the demonstration.

Role Play

One major advantage of this method is that it provides the trainees with the opportunity to apply the content to a simulated situation, thereby getting the chance to practice without the possibility of failing on the job. However, as there is no consequence,

there is the risk that the content will be taken lightly. Furthermore, the stress of performance may deter some learners and ultimately inhibit their learning.

A study investigating the use of role play in the training of genetic counseling students (McIlvried, Prucka, Herbst, Barger, & Robin, 2008) found that participants saw this method as effective in training them on the process and implications of genetic counseling, and felt that the experience would help them to communicate with patients. Role play is particularly well suited for providing trainees with the opportunity to practice and collectively reflect on how to manage important responsibilities of their job, or for sensitivity training and other contexts that include attitudinal training (Barone et al., 2005). The opportunity for reflection on the practice without the consequence of facing the embarrassment of failure is particularly helpful in cases where the content is of a sensitive nature, so we recommend the role play method for such situations.

Simulation

Simulation training is well suited for training that would otherwise be extremely dangerous or costly if conducted in a real-life environment. This method provides “safe, structured, engaging, and effective practice opportunities” (Rosen, Hunt, Pronovost, Federowicz, & Weaver, 2012, p. 243) in a risk-free environment, and has been used in medical training, flight training, military training, as well as technical training in other high-stakes fields such as nuclear power generation. Other advantages of this method are that it provides the opportunity for repeated practice, the opportunity to test limits safely, and can provide immediate feedback and a standardized experience for all trainees. Simulation can be affordable, depending on what sort of equipment is needed. Some business-ready simulations are free and readily available (Salaset al., 2009), whereas flight simulators require specialized equipment and will thus be more expensive. Hence, one drawback to this method is that simulation training systems can be costly (Noe, 2010); the potential for lost time due to equipment malfunction/technical difficulties, and the possibility that simulation training can have a dehumanizing effect on the subject matter are also worth considering. Moreover, Noe (2010) argued that for this training method to be effective and increase the likelihood of transfer of learning, trainees must be provided with immediate feedback and the simulations must be realistic.

As with any technology, simulation training systems are becoming more affordable and therefore more accessible, making them available to a wider range of training programs, such as those for medical professionals, in sports training for athletes, and even in the high school biology classroom (The Digital Frog 2.5, 2009). The most obvious recommended use for simulation training is for contexts where failure to learn the content has weighty consequences. We also recommend simulation training for situations where applied learning is necessary but the high volume of trainees makes it impractical to provide sufficient practice on-the-job; for example, a particular surgical technique for an entire group of surgical residents.

Stimulus-Based

A significant advantage of this method is that it can be widely applied, but its unconventional nature may deter some participants altogether or result in the content being taken too lightly. Trainees might not be comfortable with methods that incorporate creativity and deviate from “traditional” formats (Occupational Health and Safety Canada, 1995). Some studies show that this method enables learners to acquire the knowledge more thoroughly and more rapidly than through other methods.

We reason that this method is appropriate for contexts where the training content has a tendency to elicit stress or negative emotions in the learners. Examples cited by Zemke (1995) include training on mathematics, accounting, payment and billing services, where this method helped the learners internalize the content by its association with the positive emotional impact induced by the stimulus. This same method has been shown to be successful in the sensitivity training of medical practitioners, enabling them to overcome the barrier of their technical medical understanding to appreciate the person behind the illness (Kumagai, 2008).

Team-Training

The goal of team-training is to develop a team collectively, rather than each individual trainee. A benefit of this method is that it helps to develop social skills and camaraderie within a team (Moreland & Myaskovsky, 2000). On the flip side, to be successful, all the members of the team need to be on board and engaged in the training. There is always the possibility of resistance from one or more of the group members that would negatively affect the group performance and dynamics.

Team-training can be used to develop knowledge in a team or to develop skills in a team (i.e., time management or planning skills). Moreland and Myaskovsky (2000) cite findings that indicate that groups perform tasks better if their members are trained together and work together through the learning process rather than if trained apart. In a study that had participants trained on how to assemble radios, the groups whose members were trained together recalled more and made fewer assembly errors, than did groups whose members were trained separately (Liang, Moreland, & Argote, 1995, cited in Moreland & Myaskovsky, 2000). We recommend the team-training method for any context where employees have to work together as teams in the workplace. It is not uncommon for team members to live and work in different parts of the world, making virtual team-training a real need in some organizations; virtual team-training may include videoconferences, chat rooms, blogs or WebEx-sessions, internet-based two-way audio/visual system (Forbush & Morgan, 2004; Holtbrugge, Schillo, Rogers, & Friedmann, 2011).

Conclusion

In our review, we have identified 13 core training methods that we believe comprehensively cover all the current methods available in the training field (notwithstanding

that the terms used to refer to these methods may differ among trainers). We used seven criteria to analyze and compare these 13 training methods. We checked and assured consistency and consensus of the analysis results among us; however, we must acknowledge that consistency is no guarantor for validity, as the analyses were subjective judgments substantiated not by empirical data but by our knowledge of the training methods as reported in the literature.

Finally, we made some recommendations about which training methods are best suited for which contexts. We should caution the readers that such recommendations are designed to supplement, but not to replace, formal needs assessment designed to empirically determine training needs and the most effective strategies to meet these identified needs. Our recommendations for choice of training must be ultimately guided by local conditions and context, and trainers must try to meet the gold standard of training: using a variety of training methods to meet the diverse learning styles and needs of trainees. The notion of hybridization of training methods was only briefly touched on in our review; practitioners could significantly benefit from research findings on combining training methods to create optimal benefits for specific contexts.

Technology is pushing our understanding of these methods, creating variation within each method, and creating an abundance of “hybridization” possibilities. As new technology continues to change the training landscape, it will be advantageous to test our framework to ensure that it is robust enough to apply to these advancements.

Another area requiring a deeper investigation is how technology is and will come to further affect all types of training methods. Technology is changing the workplace; moreover, there are typically multiple generations of workers in the workplace and all “. . . generations still require training but each has its own focus, perspective, and expectations about that training” (Tyler, 2007, p. 40). The challenge then is not only about updating training to reflect the changing technology but also understanding how to use the technology to meet the range of needs and expectations of all the learners.

Finally, we hope that our research will promote greater attention about choice of training methods among trainers, elevate the level of communication among training researchers about training methods, and, consequently, foster greater effort to research and develop or refine methods of training based on the 13 core methods we identified and profiled.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

- Ampaipatkul, W. (2004). *A study of content and training methods for a five-day trainer course* (master's thesis). Mahidol University. Retrieved from <http://www.li.mahidol.ac.th/thesis/2547/cd364/4436194.pdf>

- Andrews, M., & Chilton, F. (2000). Student and mentor perceptions of mentoring effectiveness. *Nurse Education Today, 20*, 555-562.
- Assaf, A. R., Cummings, K. M., Graham, S., Mettlin, C., & Marshall, J. R. (1985). Comparison of three methods of teaching women how to perform breast self-examination. *Health Education & Behaviour, 12*, 259-272.
- Ballard, S. M., & Carroll, E. B. (2005). Internship practices in family studies programs. *Journal of Family & Consumer Sciences, 97*(4), 11-17.
- Barbian, J. (2002). A little help from your friends. *Training, 39*(3), 38-41.
- Barone, D. F., Hutchings, P. S., Kimmel, H. J., Traub, H. L., Cooper, J. T., & Marshall, C. M. (2005). Increasing empathic accuracy through practice and feedback in a clinical interviewing course. *Journal of Social & Clinical Psychology, 24*(2), 156-171.
- Bink, M. L., Wampler, R. L., Dlubac, M. D., & Cage, E. A. (2011). *Training aids for basic combat skills: A procedure for training-aid development* (Research Report 1939). U.S. Army Research Institute for the Behavioral and Social Sciences. Retrieved from <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA544611>
- Brown, D. (2004). What do apprentices think of the apprentice? *CBC News Online*. Retrieved from <http://www.cbc.ca/arts/features/apprentice/>
- Bruner, R. F., Gup, B. E., Nunnally, B. H., Jr., & Pettit, L. C. (1999). Teaching with cases to graduate and undergraduate students. *Financial Practice and Education, 9*, 138-146.
- Callahan, J. L. (2010). Constructing a manuscript: Distinguishing integrative literature reviews and conceptual and theory articles. *Human Resource Development Review, 9*, 300-304.
- Carter, S. D. (2002). Matching training methods and factors of cognitive ability: A means to improve training outcomes. *Human Resource Development Quarterly, 13*, 71-87.
- Craig, R. L. (1996). *The ASTD training and development handbook: A guide to human resource development* (4th ed). New York, NY: McGraw-Hill Professional.
- Crane, M. (2006). *To train or not to train?* [Webpage]. Retrieved from http://www.forbes.com/2006/12/04/hewlett-packard-general-electric-microsoft-ent-hr-cx_mc_1204training.html
- de Jong, J. A., Thijssen, J. G. L., & Versloot, B. M. (2001). Planned training on the job: A Typology. *Advanced in Developing Human Resources, 3*, 408-415.
- The Digital Frog 2.5. (2009). Available from www.digitalfrog.com
- Elam, E. L. R., & Spotts, H. E. (2004). Achieving marketing curriculum integration: A live case study approach. *Journal of Marketing Education, 26*, 50-65.
- Faria, A. J. (2001). The changing nature of business simulation/gaming research: A brief history. *Simulation & Gaming, 32*, 97-110.
- Forbush, D. E., & Morgan, R. L. (2004). Instructional team training: Delivering live, internet courses to teachers and paraprofessionals in Utah, Idaho and Pennsylvania. *Rural Special Education Quarterly, 23*(2), 9-17.
- Geet, S. D., & Deshpande, A. A. (2008). *Elements of human resource management*. Pune, Mumbai: Pragati Book Centre.
- Gentry, J. (1990). *Guide to business gaming and experiential learning*. London, England: Nichols Publishing.
- Gist, M., Rosen, B., & Schwoerer, C. (2006). The influence of training method and trainee age on the acquisition of computer skills. *Personnel Psychology, 41*, 255-265.
- Hackett, P. (2007). Choosing appropriate learning opportunities & designing training. In *Training practice*. London, England: Chartered Institute of Personnel and Development.

- Heneman, H. G., III., Schwab, D. P., Fossum, J. A., & Dyer, L. D. (1989). *Personnel/human resource management*. New York, NY: Irwin.
- Ho, W. H., Chang, C. S., Shih, Y. L., & Liang, R. D. (2009). Effects of job-rotation on job satisfaction and organizational commitment. *BMC Health Services Research*, 9(8), 1-10.
- Holtbrügge, D., Schillo, K., Rogers, H., & Friedmann, C. (2011). Managing and training for virtual teams in India. *Team Performance Management*, 17, 206-223
- Ittner, P. L., & Douds, A. F. (1997). *Train the trainer: Instructors guide*. Amherst, MA: HRD Press.
- Johnson, L. A., & Helms, M. M. (2008). Keeping it local: Incorporating a local case study in the business curriculum. *Education and Training*, 50, 315-328.
- Kirby, R. L., Bennett, S., Smith, C., Parker, K., & Thompson, K. (2008). Wheelchair curb climbing: Randomized controlled comparison of highly structured and conventional training methods. *Archives of Physical Medicine and Rehabilitation*, 89, 2342-2348.
- Klein, H. J., Noe, R. A., & Wang, C. (2006). Motivation to learn and course outcomes: The impact of delivery mode, learning goal orientation, and perceived barriers and enablers. *Personnel Psychology*, 59, 665-702.
- Kneebone, R. (2003). Simulation in surgical training: Educational issues and practical implications. *Medical Education*, 37, 267-277.
- Knouse, S. B. (2001). Virtual mentors: Mentoring on the internet. *Journal of Employment Counseling*, 38, 162-169.
- Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, 4, 193-212.
- Kumagai, A. K. (2008). A conceptual framework for the use of illness narratives in medical education. *Academic Medicine*, 83, 653-658.
- Lainema, T., & Makkonen, P. (2003). Applying constructivist approach to educational business games: Case REALGAME. *Simulation & Gaming*, 34, 131-149.
- Lam, T. C. M., Kolomitro, K., & Alamparambil, F. (2011). Empathy training: Methods, evaluation practices, and validity. *Journal of MultiDisciplinary Evaluation*, 7(16), 162-200.
- Liang, D. W., Moreland, R. L., & Argote, L. (1995). Group versus individual training and group performance: The mediating role of transactive memory. *Personality and Social Psychology Bulletin*, 21, 384-393.
- Löwe, B., Hartmann, M., Wild, B., Nikendei, C., Kroenke, K., Niehoff, D., & Herzog, W. (2008). Effectiveness of a 1-year resident training program in clinical research: A controlled before-and-after study. *Journal of General Internal Medicine*, 23, 122-128.
- Lujan, H. L., & DiCarlo, S. E. (2006). First-year medical students prefer multiple learning styles. *Advancements in Physiology Education*, 30, 13-16.
- McIlvried, D. E., Prucka, S. K., Herbst, M., Barger, C., & Robin, N. H. (2008). The use of role-play to enhance medical student understanding of genetic counseling. *Genetic Medicine*, 10, 739-744.
- Menkel-Meadow, C. (2000). Telling stories in school: Using case studies and stories to teach legal ethics. *Fordham Law Review*, 69, 787.
- Moreland, R. L., & Myaskovsky, L. (2000). Exploring the performance benefits of group training: Transactive memory or improved communication? *Organizational Behavior and Human Decision Processes*, 82, 117-133.
- Nadkarni, S. (2003). Instructional methods and mental models of students: An empirical investigation. *Academy of Management Learning & Education*, 2, 335-351.

- Neri, A., Mich, O., Gerosa, M., & Giuliani, D. (2008). The effectiveness of computer assisted pronunciation training for foreign language learning by children. *Computer Assisted Language Learning*, 21, 393-408.
- Noe, R. A. (2010). *Employee training and development* (5th ed.). Alexandria, VA: ASTD Press.
- Occupational Health and Safety Canada. (1995, January/February). *Selecting the best training method*, 11(1), 66-73. Retrieved from <http://search.proquest.com/docview/224601458?accountid=11530>
- Organizational Development & Learning Centre. (2009). *Mentoring*. Retrieved from <http://www.utoronto.ca/hrhome/odlc/lead/mentor.html>
- Richardson, J. C., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Networks*, 7(1), 68-88.
- Rosen, M. A., Hunt, E. A., Pronovost, P. J., Federowicz, M. A., & Weaver, S. J. (2012). In situ simulation in continuing education for the health care professions: A systematic review. *Journal of Continuing Education in the Health Professions*, 32, 243-254.
- Russ-Eft, D. (2002). A typology of training design and work environment factors affecting workplace learning and transfer. *Human Resource Development Review*, 1, 45-65.
- Saiyadain, M. S. (2009). *Human resources management*. New Delhi, India: Tata McGraw-Hill.
- Salas, E., Wildman, J. L., & Piccolo, R. F. (2009). Using simulation-based training to enhance management education. *Academy of Management Learning & Education*, 8, 559-573.
- Schank, R. C. (1996). Goal-based scenarios: Case-based reasoning meets learning by doing. In D. Leake (Ed.), *Case-based reasoning: Experiences, lessons & future directions* (pp. 295-347). AAAI Press.
- Scott, S. G. (2010). *Factors impacting the selection of training-delivery systems and training methodology of Virginia training professionals* (Unpublished dissertation). Virginia Polytechnic Institute and State University, Blacksburg.
- Sheets, J. (1998). Role-playing as a training tool for reference student assistants. *Reference Services Review*, 26(1), 37-41.
- Sheikh, S. A. (2008). Use of new knowledge and knowledge management to gain competitive advantage. *Communications of the IBIMA*, 1, 34-41.
- Shivakumar, K. (2012). The case study method in training and management education. *The IUP Journal of Soft Skills*, VI(2), 55-64.
- Simmonds, D. (2003). The design of training events. In D. Simmonds (Ed.), *Designing & delivering training* (pp. 73-107). London, England: Chartered Institute of Personnel and Development.
- Stanisavljevic, J., & Djuric, D. (2013). The application of programmed instruction in fulfilling the physiology course requirements. *Journal of Biological Education*, 47, 29-38.
- Stedman, J. M. (1997). What we know about predoctoral internship training: A review. *Professional Psychology: Research and Practice*, 28, 475-485.
- Thiagarajan, S. (2005). *Thiagi's interactive lectures: Power up your training with interactive games and exercises*. Alexandria, VA: ASTD Press.
- Tiger, J. H., Hanley, G. P., & Bruzek, J. L. (2008). Functional communication training: A review and practical guide. *Behavior Analysis in Practice*, 1(1), 16-23.
- Todd, K. H., Heron, S. L., & Thompson, M. (1999). Simple CPR: A randomized, controlled trial of video self-instructional cardiopulmonary resuscitation training in an African American Church congregation. *Annals of Emergency Medicine*, 34, 730-737.
- Torraco, R. J. (2005). Writing integrative literature reviews: Guidelines and examples. *Human Resource Development Review*, 4, 356-367.

- Tsuda, S., Barrios, L., Derevianko, A., Irias, N., Schneider, B., Schwaizberg, S., & Jones, D. B. (2008, April). *Does telementoring shorten the pathway to proficiency in the simulation environment?* Poster session presented at the Society of American Gastrointestinal and Endoscopic Surgeons, Philadelphia, PA, USA. Retrieved from <http://www.sages.org/wp-content/uploads/posters/2008/18638.jpg?6c049a>
- Tyler, K. (2007). The tethered generation. *HR Magazine*, 52(5), 40.
- Tyler, K. (2008, September). 15 ways to train on the job. *HR Magazine*, 105-108.
- Van Noord, R., & Peterson, J. (2010). *Practical approaches for incorporating online training into staff development initiatives*. World library and information congress: 76th IFLA general conference and assembly, Gothenurg, Sweden. Retrieved from <http://conference.ifla.org/past/ifla76/107-noord-en.pdf>
- Verma, A., & Singh, A. (2010). Webinar—Education through digital collaboration. *Journal of Emerging Technologies in Web Intelligence*, 2(2), 131-136.
- Vincent, A., & Seymour, J. (1994). Mentoring among female executives. *Women in Management Review*, 9(7), 15-20.
- Wang, S. K., & Hsu, H. Y. (2008). Use of the webinar tool (Elluminate) to support training: The effects of webinar-learning implementation from student-trainers' perspective. *Journal of Interactive Online Learning*, 7(3), 175-190.
- Webster-Wright, A. (2009). Reframing professional development through understanding authentic professional learning. *Review of Educational Research*, 79, 702-739.
- Wheelan, S. (2005). Promoting effective team performance through training. In D. E. Sims, E. Salas, & C. S. Burke (Eds.), *The Handbook of Group Research and Practice* (pp. 407-426). Sage.
- Wilson, H. C. (2000). Emergency response preparedness: Small group training: Part 2. *Disaster Prevention and Management*, 9, 180-199.
- Wilson, K. A., Bedwell, W. L., Lazzara, E. H., Salas, E., Burke, S. C., Estock, J. L., & Conkey, C. (2009). Relationships between game attributes and learning outcomes. *Simulation & Gaming*, 40, 217-266.
- Zemke, R. (1995, October). Accelerated learning: Madness with a method. *Training*, 32, 93-96.
- Zerzan, J. T., Hess, R., Schur, E., Phillips, R. S., & Rigotti, N. (2009). Making the most of mentors: A guide for mentees. *Academic Medicine*, 84, 140-144.
- Zhang, D., Zhao, J. L., Zhou, L., & Nunamaker, J. F., Jr. (2004). Can e-learning replace classroom learning? *Communications of the ACM*, 47(5), 75-79.

Author Biographies

Barbara Ostrowski Martin is a curriculum consultant at the Humber Institute of Technology and Advanced Learning. Her interests are in teaching and learning research.

Klodiana Kolomitro is an educational developer at Queen's University. Her research interests include learning theories, faculty development, and evaluation.

Tony C. M. Lam is a professor at the University of Toronto, whose teaching and research are in measurement and evaluation.