

Where Training Resources Should be Allocated

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ABSTRACT

Proper allocation of training budgets and resources requires fundamental and important business decisions. Unless the organization's training function is a revenue-generating business, the demand for training most likely exceeds capacity and budgets are likely viewed as an expense – which is continually scrutinized. As a result, resources need to be focused on those initiatives that are important and which can maximize the training investment and demonstrate value. Otherwise, limited resources may be improperly invested in programs that end up having minimal impact on the organization's missions/goals.

How can training program funding decisions be optimized? Should money and resource allocations be equally spread across programs? Should the focus be on a few programs, with eLearning or blended solutions being favored to spread the investment? How can spending on the training function be prioritized in advance to deal with the constant challenge of new products, regulations and initiatives that require training?

Managing training budgets and resources should be no different than managing any other investment, including information technology. The issue is how much time, money and resources are required to run programs versus the benefits generated in return. To identify benefits, links should be established between training activities and missions/goals – to define why training is needed in the first place. Training should address specific performance deficiencies needed to achieve unit/organizational goals and, as a result, the success and importance of training will not be measured by the skills and competencies that are being developed, but by the impact of the newly acquired skills on "performance".

This paper presents a process for capturing the costs and benefits of instructor-led, eLearning, and blended solutions, assessing the impact of training initiatives on performance, missions and goals, identifying reasons behind success/failure, and maximizing training investment by redirecting resources to those activities that generate the greatest impact.

ABOUT THE AUTHORS

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INTRODUCTION

In a changing warfighting environment, the ability to absorb and process new information, and quickly adapt, is critical to mission success. This reality of warfare is demanding greater emphasis on high-order training for both individual and team cognition. To respond to these emerging needs, training design and development professionals are seeking out alternative training design models and innovative training delivery methodologies.

The predicament for training design and development professionals is likely due to measures traditionally held by these same professionals. Although useful for incrementally improving the effectiveness of training programs, traditional trainee feedback and assessment results (Kirkpatrick, 1994) tend to be of minimal interest to end-users as a measure of overall training effectiveness. Ultimately, training value is derived from the trainees' ability to *apply* learned concepts on the job and the resultant impact on mission goals (Kirkpatrick, 1994 and Phillips, 1997).

Current models (e.g., Kirkpatrick, 1994 and Phillips, 1997) rely upon collection of effectiveness data once training has been delivered to determine overall value and, in-turn, to determine the future distribution of funds. We propose that if training impact is assessed during the up-front planning phase, such a protocol would offer new insight on where training budgets and resources *should* be allocated. Moreover, such a shift from a historical data collection and reduction model, to a predictive analysis model may permit training program managers to: (1) become more responsive to current and future training needs, (2) increase the impact of training by focusing only on the most crucial initiatives, and (3) Improve program efficiency by offering a methodology for selecting only cost-effective training delivery options.

THE BASICS

Whether the training decision-making process is focused upon financial measures – such as Return On Investment (ROI), or qualitative measures – such as

Return On Expectations (ROE), the ultimate objective should always be the same – generate the greatest benefit (value) at the lowest possible cost. With the exception of those programs dictated by policy (e.g., compulsory compliance-type), the value of most training programs can generally be derived from the soldier's application of the newly-acquired skills and competencies. That is, how these skills and competencies directly support the soldier in performing their tasks, and the impact of these tasks on the overall unit's mission success.

Six strategies to improve a training program's overall efficiency during the front-end planning stage are discussed. The first three strategies are aimed at increasing the benefit (value) of training programs, and the following three strategies are aimed at decreasing costs. Although these are presented as interdependent, they may be applied individually or in any combination. As evidence to this point and as a means to facilitate implementation, recommendations for a streamlined four-phased approach are also presented.

At first glance, we acknowledge this approach may appear to be a purely financial strategy – perhaps better handled by accountants. Our proposition, described in the following sections, demonstrates that up-front decisions made by training professionals can more properly impact benefit (value) determinations, as well as costs of training programs.

STRATEGY #1: ALIGN TRAINING WITH MISSIONS/GOALS

Determining where training budgets and resources should be allocated is an important decision for any training unit. Unless the training program is a revenue generating business (unlikely in most military training circles), the budget is viewed as an expense – which is being continually scrutinized. Moreover, the demand for training most likely exceeds capacity. As a result, resources must be focused on the most important initiatives – to maximize training investment and demonstrate value. Otherwise, limited resources may be invested in training programs that have minimal impact on the unit's overall mission goals.

So, how should decisions be made on which programs to fund? Should money/resources be allocated equally amongst several programs? Should the focus be on just a few programs? How can spending be prioritized in advance and how do we deal with the constant onslaught of new mission requirements and performance challenges that require training? In such cases, managing training budgets and resources should be no different than managing any other investment, such as major equipment or information technology acquisitions. The answers equate to how much time, money, and resources are required by each program, and the potential benefits generated in return.

To identify tangible benefits, clear links should first be established between training activities and mission goals. In other words, a clear understanding is needed on why the training is needed in the first place. Each training program should be required to address specific performance deficiencies, and what is needed to achieve performance improvement. As a result, the success and importance of training will no longer be measured by the skills and competencies that are being developed, but by the impact of the newly acquired skills and competencies on desired performance. In other words, how well the training resolves specific on-the-job 'problems' or 'performance gaps and, of course, the priority assigned to each problem.

If, for any reason, the training solution does not contribute to a specific 'performance' gain, then the need for training – whether instructor-led or eLearning or any other delivery method applied – should be questioned. In Peter Drucker's own words: "...if it cannot be measured, it cannot be managed."

The process of linking training programs with mission goals is similar to the Training Needs Analysis (TNA) and assessment process applied by the US Department of Defense (DoD) in MIL-HDBK 29612-2A (2001). The DoD prescribes identification of mission goals (performance outcomes), tasks needed to achieve these goals, as well as determining the knowledge, skills, and attitudes required to successfully perform these tasks.

The primary difference in the proposed approach is the added focus on the criticality of the missions, tasks needed to achieve the goals, and knowledge/skills needed to perform the tasks. With this knowledge in hand, training professionals can: (1) link to knowledge and skills needed by various groups to attain desired performance, (2) identify which programs have the greatest impact and why, and (3) maximize training value by redirecting money and resources to only those activities that specifically address the most critical

needs. Our process for addressing this step-by-step approach is discussed in the following sections:

Step 1. Define and prioritize the organization's/unit's mission/performance goals. Although the primary objective of training should be the development of individual knowledge, skills and competencies, what should really count is the resultant improvement in individual and/or collective 'performance' needed to meet the stated unit/organization goals. Thus stated, current priorities must be adequately defined before the analysis may move forward (e.g., *'Intercept 99% of hostile missile launches'*).

Step 2. Identify the mission tasks needed to achieve overall performance goals. Once the unit's missions and goals have been documented and prioritized, those individual and/or collective tasks needed to achieve these goals must be identified, and each task should ideally be further divided into appropriate subtasks. More importantly, the desired performance should be stated in measurable terms – (e.g., *"Detect hostile missiles within 15 minutes of launch"*).

Step 3. Assign tasks to various groups/jobs. The question to be addressed here is: Who needs to perform tasks needed to achieve the stated performance goals? In some cases, different groups (e.g., pilots and crewmen) may be involved in the performance of a specific task. If required, the scope of the analysis can be extended to include those basic tasks that are not specifically aimed at a mission/goal (e.g., *"Perform radar systems power-on within 5 minutes"*).

Step 4. Determine which tasks require training. The attributes of each task, i.e., level of difficulty, level of importance/criticality, and frequency of performance, are further analyzed to determine if training is needed, and the criterion performance level for this training.

Step 5. Prioritize the knowledge, skills and attitudes needed to perform those tasks that require training. For radar operators, for example, *"Detecting malfunctions"* may be rated as 'Critical', while *"Correcting a malfunction"* may only be rated as 'Important'. As a result, the relevant importance of each knowledge, skill or attitude on specific tasks and, in-turn, the unit/organization goals may be established.

Step 6. Identify the knowledge and skill gaps. Existing and potential gaps may be revealed by comparing the knowledge, skills, and attitudes needed by each group to achieve the desired level of performance, with the current knowledge, skills and attitudes of the group. For example, to transition pilots

from F16 to F35, compare the knowledge and skills needed by F-35 pilots to current knowledge and skills of F-16 pilots.

Step 7. Identify implementation issues. The feasibility and effectiveness of plausible training solutions should be assessed, by examining the availability of funding and resources, compatibility with existing programs, and any unit/organizational attitudes towards the proposed training solutions.

Step 8. Prioritize activities and prepare a plan of action by compiling the data in a manner that will help to determine which training programs can generate the greatest impact and why. Moreover, with these relationships in place, training programs may be realigned as the organizational/unit priorities change, new initiatives (i.e., missions and/or regulations) are introduced, and as new challenges arise. For example, it may be entirely feasible to quickly find out which training programs support a specific mission/goal, how each training program is contributing to the unit's mission goals, or which training programs offer little or no impact to the end state goals.

STRATEGY #2: IMPROVE HUMAN PERFORMANCE

"I need a training program on ..." the typical opening statement in what oftentimes turns out to be a costly, frustrating and unsuccessful campaign to achieve a level of desired performance. The rationale for training often seems clear – a new system is being implemented, too many accidents or mission failures are being experienced, a process has too many errors, etc.

On the other hand, prominent researchers (Burke, 2002, Gilbert 1996, Harless, 2000, Kaufman 1996, Mills, Pace and Peterson 1998, Pipe and Mager, 1999, Rummler and Brache 1995, Stolovitch and Keeps 2004, Zemke and Kramlinger 1982) have successfully argued that most performance deficiencies are due to environmental factors, which may include vague expectations, insufficient/untimely feedback, limited experience, insufficient access to required information, inadequate tools, resources and procedures, inappropriate and counterproductive incentives, etc.

Yet, when a performance gap does occur, the default intervention is all too often training – although it is typically much easier to fix the environmental issues rather than the people. In simple terms – if the gap is not due to a lack of skill and knowledge, don't train!

Moreover, even when it is determined that training is necessary, is it sufficient? A training intervention, on its own, will rarely work if it is not part of a total performance system – a concept recently acknowledged by the US Navy's (2001) Revolution in Training report.

To further assess the need, as well as the impact, of a training intervention relative to other solutions, we present the following step-by-step approach to analyzing performance deficiencies, detecting the source of problems, identifying solutions (including training) that may produce the desired performance level, and recommended actions to maximize ROI.

Step 1. Define the problem and validate assumptions. In other words, who initiated the request for training, and for what reason? Based upon circumstantial evidence and constraints, the validity of a request can be evaluated, the cost of the problem may be estimated, and a need for further analysis confirmed.

Step 2. Identify potential sources to the problem. The source of the problem may be resident to a variant degree within a group or across multiple groups across various units. For example, a stated "*inability to detect hostile missiles in a timely basis*" may have originated from either the radar operators group or, perhaps, the maintainer group, or other group.

Step 3. Collect data. A number of vehicles may be used for collecting data, and these may include surveys, individual or group interviews, document searches, etc. However, the point here is that some form of empirical evidence is needed, and that this must be verified/validated to pinpoint the causal factors for the performance deficiency within/across each group.

Step 4. Analyze the collected data to uncover the cause of the problem within/across each group. Typical sources of such problems include the lack of clarity in described job functions, inadequate feedback, lack of access and/or reliability of the resources used to perform the task, disincentives to perform effectively and/or efficiently, lack of requisite knowledge and skills, physical and mental capacity, or motivation.

Step 5. Identify plausible solutions/remedies for each group and rate these in terms of their power to bridge the performance gap. In addition to training and job aids, plausible solutions may include task, job and/or organization/unit and/or policies/procedures redesign, new/improved toolsets or incentive systems. Examples are presented in the following Table 1 for illustration.

Step 6. Identify implementation issues. Assess the feasibility/effectiveness of solutions by examining available lines of funding and existing resources (implementation and sustainment of the final solution), compatibility with existing systems, and organizational attitudes/perception regarding the proposed solutions.

Step 7. Compute the direct cost and benefits of each potential solution. Capture all data pertaining to each remedy, including those typical indirect costs associated with the soldier's cost of time, cost of lost opportunity, travel cost, facilities cost, equipment, and sustainment. With costs and potential benefits identified, ROI for each solution may be calculated.

Step 8. Prioritize recommendations and prepare a plan of action. Compile and compare the costs and benefits of plausible solutions to obtain a picture of which remedies will generate the greatest impact and why.

Table 1. Plausible Solutions for Potential Problems

Source of the Problem	Plausible Solution
Clarity of job functions	Explain job functions
Adequacy of feedback	Offer adequate feedback
Access/Reliability of resources needed to perform task	Provide access to reliable resources needed to perform task
Incentives to perform effectively and efficiently	Implement an incentive system
Lack of knowledge/skills	Train
Physical and mental capacity	Supplement capabilities

STRATEGY #3: REDUCE TIME TO COMPETENCY

As the ultimate objective of a training program should be to develop skills, competencies and/or attitudes needed to resolve a performance deficiency and, in-turn, attain unit and organizational goals, closing the performance deficiency sooner may result in significant added benefits. For example, the sooner operational staff acquire skills needed to implement a new process, the sooner the savings will kick-in.

Although it may be argued that training programs should always be delivered as quickly as possible, the time needed to develop Electronic Performance Support Systems (EPSS) or Interactive Courseware (ICW) that provide the right information to the right individuals at the right time may be significantly longer, and the costs substantially higher than traditional methods.

Thus stated, the following sections present an approach to assist in determining the added benefit of reducing time to competency, the feasibility of using alternate delivery options as well as the costs of these various alternatives, with the objective being to select the delivery option that will generate the greatest impact.

Step 1. Identify potential gains. List the benefits that may result from reducing time to competency in measurable terms. The benefits may be deduced by examining the primary objective of the training program, as illustrated in Table 2:

Table 2. Examples of Measurable Benefits

Objective	Measurable Benefit
Improve productivity	The sooner desired productivity is attained; the sooner productivity gains can be realized. For example, process more action requests, or resolve more technical problems.
Reduce errors	The sooner new processes are implemented; the sooner savings can be realized. For example, minimize waste, rework or administrative costs.
Reduce operating costs	The sooner new technology is introduced; the sooner savings can be realized. For example, reducing overhead or overtime.
Reduce number of personnel	The sooner employees are ready to perform new functions, the sooner downsizing or rightsizing can take place.

Step 2. Estimate potential benefits. Compute the anticipated minimum and maximum benefits per individual per day as a result of reducing time to competency, and document the assumptions. For example, if the cost of processing one support action request is \$10, and the staff are expected to process 5 to 7 additional action requests per day as a result of training on a new forms processing technology, then the benefits per individual per day are expected to vary between \$50 and \$70.

Step 3. Collect data. Vital information related to course content, audience, and any environmental variables must be collected to assist in determining which delivery options are even possible, or plausible.

Step 4. Identify plausible delivery options. Analyze collected data to determine how well each option meets organizational, learning, and learner needs. Options that do not meet a critical requirement or an acceptable standard should be eliminated. It goes without saying that there is no point in considering options that do not close an identified knowledge or skill gap.

Step 5. Determine time to achieve the competency solution. Estimate time needed to design, develop and deliver the training for each plausible delivery option.

Step 6. Compute potential benefits. The benefits of reducing time to competency are captured by translating time-savings into monetary value. If one delivery option, for example, can develop the knowledge and skills of the same staff identified in the previous Step 2, perhaps, 30 days faster, the added benefits of reducing time to competency is approximately \$1,500 (\$50 x 30 days) to \$2,100 (\$70 x 30 days) per individual.

Step 7. Compute and compare the costs of plausible options, which may include out-of-pocket expenses, and personnel needed to design, develop, administer, manager, deliver, maintain and support these options. The net benefit of each delivery option can be computed by subtracting forecasted costs from potential benefits.

Step 8. Prepare recommendations. Compile and compare the costs and benefits of plausible delivery options to obtain a clear picture of which alternative will generate the greatest impact and why.

To summarize and illustrate the importance of this approach, a 1995 study that examined the benefit of cross-training Radio Operators and Martine Traffic Regulators in the Canadian Coast Guard was able to demonstrate over \$20 million in added benefits as a result of reducing time to competency by one year – using a simplistic \$100,000 loaded annual salary cost of 200 individuals.

STRATEGY #4: SELECT THE RIGHT BLEND OF DELIVERY OPTIONS

How is the right blend of delivery methods for a training program selected? Certainly, most training professionals understand that eLearning, for example, can provide just-in-time access to training material whenever and wherever it is needed. Moreover, it can reduce travel costs and, in some cases, time required to complete training. On the other hand, effectiveness questions for this delivery medium may be an issue:

Is eLearning suited for all training activities and for all learners? Does the unit/organization have an infrastructure in place to develop, deliver, administer, manage, update, and sustain an eLearning strategy? Besides, which eLearning method [Computer-Based Training (CBT), Web-Based Training (WBT), Internet Virtual Classroom, etc.] should be used?

Is an off-the-shelf solution available? Would a blending of delivery options be more effective and economical than a single method? Should this be developed with internal resources, or externally? How much is it going to cost? And where will the savings be coming from?

We present in the following sections our step-by-step approach for this media selection process. Our process can offer valuable insight on which specific variables should be taken into highest consideration and why, as well as how to generate the data needed to support a final recommended solution.

Step 1. Identify delivery options currently supported by the unit/organization. All media supported by the unit/organization should be considered. These may include instructor-led, self-study books, videos, varied levels of off-the-shelf and custom-built CBT and/or WBT, internet virtual classrooms, EPSS, computer conferencing / video conferencing / teleconferencing, etc., as well as trainers, simulators and virtual reality.

Step 2. Collect data. Vital information related to course content, audience and environment must be collected to determine possible/plausible delivery options.

Step 3. Divide the training program into modules. To evaluate the effectiveness, costs, and benefits of various blends of delivery options, the training program should be subdivided into modules, to include such items as prerequisites, underlying theory (as applicable), and hands-on exercises, and then sequenced in the order in which these should be presented. Moreover, all training objectives within a module should have similar characteristics – i.e., require similar characteristics in terms of audio, video, tactile, fidelity, and initiating/discriminating cue quality.

Step 4. Identify plausible delivery options. Analyze collected data to determine how well each option can meet organizational, learning, and learner requirements. Options that do not meet a critical requirement (e.g., required level of display, control, hardware, system, motion, audio or video fidelity) or an acceptable rating (e.g., *satisfy 90% of requirements*) are eliminated. After all, there is no point in considering options that do not close an identified knowledge or skill gap.

Step 5. Compute and compare the costs of plausible delivery options, which may include out-of-pocket expenses, as well as personnel needed to design, develop, administer, manager, deliver, maintain and

support the delivery option. As there will likely be multiple options that are considered similar or equally effective in the delivery of training (e.g., instructor-led versus ICW for knowledge-based training objectives, or instructor with [live] equipment and/or trainers for skill-based training objectives), life cycle costs can be expected to significantly impact the final decision.

In addition to pinpointing potential savings, this cost analysis facilitates resource management by identifying upfront versus recurring costs, and resources needed over the life-cycle of the [training] project.

Step 6. Consider a blended delivery strategy. The overall cost and resource requirements of plausible blends of delivery options should be computed and compared to determine the strategy that makes the most sense given the existing infrastructure and resources.

Step 7. Identify potential implementation issues. Assess organizational readiness for implementing new learning technology, and identify actions and associated costs needed to minimize the implementation risk. These may include, for example, retraining of development, delivery and support personnel, updating policies and procedures, developing a communication plan, etc. Of course, the more experience a training unit/organization has with a particular delivery media/technology, the lower the likely resultant risk.

Step 8. Prepare recommendations. Compile and compare the effectiveness, costs, and benefits of each plausible blend of delivery options, and develop the rationale behind the recommended delivery strategy.

Again, to illustrate the significance of this strategy, a recent study for extending a nine-month instructor-led Command and Staff College course to 390 officers for the Canadian Forces College revealed that adopting an alternative blended delivery option strategy would result in over \$22 million savings in an up-front sunk investment for new school facilities, as well as a \$6 million in annual recurring costs (Bahlis, Daigneault and MacArthur, 2002).

STRATEGY #5: CONSIDER INTERNAL VERSUS EXTERNAL OPTIONS

In certain circumstances, external training consultants can be more effective and economical than internal staff. External consultants, for example, may offer certain expertise in specific fields that are difficult to

attain within a training group that caters to a wide range of needs. By capitalizing on external expertise, the learning curve of the internal training group may be reduced and costly errors may be avoided.

Similarly, there are advantages and disadvantages to off-the-shelf training interventions versus custom-built training solutions. In general, off-the-shelf solutions can be implemented fairly quickly and are less costly, however, custom-built solutions can be advantageous when development time is flexible, target audience is large, and existing solutions do not meet critical needs. A custom-built solution in such cases may increase productivity and minimize costly errors. To determine when external resources versus off-the-shelf solutions should be considered, as well as the advantages and limitations of each option, a step-by-step approach is presented in the following sections:

Step 1. Define your needs. As one of the primary objectives of military training is to develop skills, competencies and/or attitudes needed to attain mission goals, off-the-shelf solutions that do not meet a critical mission requirement or provide an acceptable competency level should be eliminated right away. After all, there is no point in considering options that do not close an identified knowledge or skill gap. If an off-the-shelf solution appears to partially meet your training needs, then a blended option that capitalizes on the strengths of available programs may be considered.

Step 2. Evaluate the experience and expertise of internal resources. The capabilities of in-house staff should be identified and measured against the projected needs. In other words, does the training team have the skills and expertise to achieve the desired training outcome in a cost effective manner? If the answer is 'no', then the need for developing in-house expertise should be examined. For one-time events, full or partial outsourcing of the project may result in a more effective and economical solution. If, on the other hand, similar projects are expected in the near future, then developing in-house expertise while avoiding costly errors should also be factored in the decision.

Step 3. Evaluate available budget and resources. In many cases, required training program services – such as syllabus design, development, administration, management, delivery, and sustainment – can be performed by internal staff or subcontracted to external providers. If budget and labor conditions permit, the costs as well as the risks (i.e., impact on existing programs and organizational goals, etc.) of using an internal team, external consultants, or a team that capitalizes on the strengths of both internal and external resources should be factored in the decision.

Step 4. Estimate potential benefits. In addition to cost avoidance, the added benefits that may result from reducing time to competency (Strategy #3) should also be considered. For example, if training is expected to reduce the aforementioned radar systems' downtime by 10 hours per month, and the average cost for each hour of downtime is \$1,000, then the potential benefits of training is \$10,000 per month for each piece of equipment.

Step 5. Determine time to achieve competency. Estimate time needed to design, develop and deliver off-the-shelf as well as any custom-built training solutions that may have been developed using internal and/or external resources.

Step 6. Compute potential benefits. The added benefits of reducing time to competency are captured by translating time-savings into monetary value. If, for example, outsourcing can reduce the average radar mechanics' time to competency by 30 days and in-turn minimize the downtime of 50 sets of radar equipment, then the benefits of attaining the goal faster can be estimated as follows: $\$10,000 \times 50 = \$500,000$.

Step 7. Compute and compare the costs of off-the-shelf as well as custom-built solutions using internal and/or external resources. This may include out-of-pocket expenses as well as those staff needed to design, develop, administer, manager, deliver, maintain and support. The net benefit of each option may be computed by subtracting forecasted costs from potential benefits.

Step 8. Prepare recommendations. Compile and compare the costs and benefits of plausible combinations of off-the-shelf and custom-built solutions using internal and/or external resources – to determine which alternative will provide the most effective and economical solution.

STRATEGY #6: DUPLICATE EFFICIENT PROGRAMS AND DETECT PROBLEM AREAS

Do you know how other training units, schools, or training program managers have been developing and delivering their most effective and economical training programs, and why? Do you know your real cost of developing skills needed to perform critical tasks and how this compares to other organizations/units? Are you comparing the costs and benefits of various learning initiatives and allocating funds accordingly? Are you forecasting budget and resource needs for your training program over the next 3-to-5 years, or beyond? Do you know how your organization

measures up against other training organizations/units? In other words, are you making the most of your training budgets and resources?

By managing training budgets and resources from a centralized database, data from multiple training programs, schools, and/or units may be compiled, analyzed, and compared – to identify ways of running training programs more effectively and economically. Costs and resources needed to design, develop, administer, manage, instruct, maintain, and support various training programs should be computed and compared against others to find out what has worked and why, to detect and correct problem areas, and to minimize duplication. Key elements of our recommended process to duplicate efficient training programs and detect problem areas are presented in the following step-by-step sections:

Step 1. Roll-up the data. Training programs (which can be further divided into modules) are your building blocks. Once the impact of a training program on performance, goals, and unit missions has been defined, and out-of-pocket expenses and resources needed to conduct the training have been captured, relevant data may be made accessible to all authorized users.

Step 2. Assign privileges. Indicate who has access to which data. This may be structured to reflect the hierarchy of the training organization, i.e., who reports to whom, or whom has authority over which programs.

Step 3. Compile data. To facilitate management of training budgets and resources, each individual should compile data from the training programs they have responsibility for. For example, a training coordinator may be limited to their own training programs, while a school commander may wish to compile data from all training programs under the schoolhouse.

Step 4. Classify data. Set-up a classification schema to zero in on the data needed to make informed decisions and to generate the desired reports. For example, compute and compare the costs of: training radar operators and maintainers on various types of systems; development, delivery and maintenance by vendors and training units; various certification programs; development of various skills, and so on.

Step 5. Analyze data. With data from all training programs residing in a central database, training program managers at different levels can determine how much money and resources are required to run one or multiple training programs – to fully discover

where money is being spent (e.g., salaries, travel, etc.); identify what worked and why; detect problem areas; assess the impact of alternate delivery options and potential risks; evaluate build versus buy decisions; evaluate the use of internal versus external resources; as well as consider multiple what-if scenarios.

Step 6. Prioritize recommendations and prepare a plan of action. By comparing the effectiveness, costs, and benefits of various training programs within a unit or across the entire organization, it is a relatively simple next step to find out which units, vendors, and initiatives are generating the greatest impact and why – and reallocate your funding and resources accordingly.

A FOUR-PHASE APPROACH

We combine and illustrate the previously proposed strategies in the following Figure 1 – using a recommended four-phased approach. The sections that follow provide a discussion on the application of this approach – one that relies upon facts to maximize the impact of training budgets and resources, and to support the overall decision-making process.

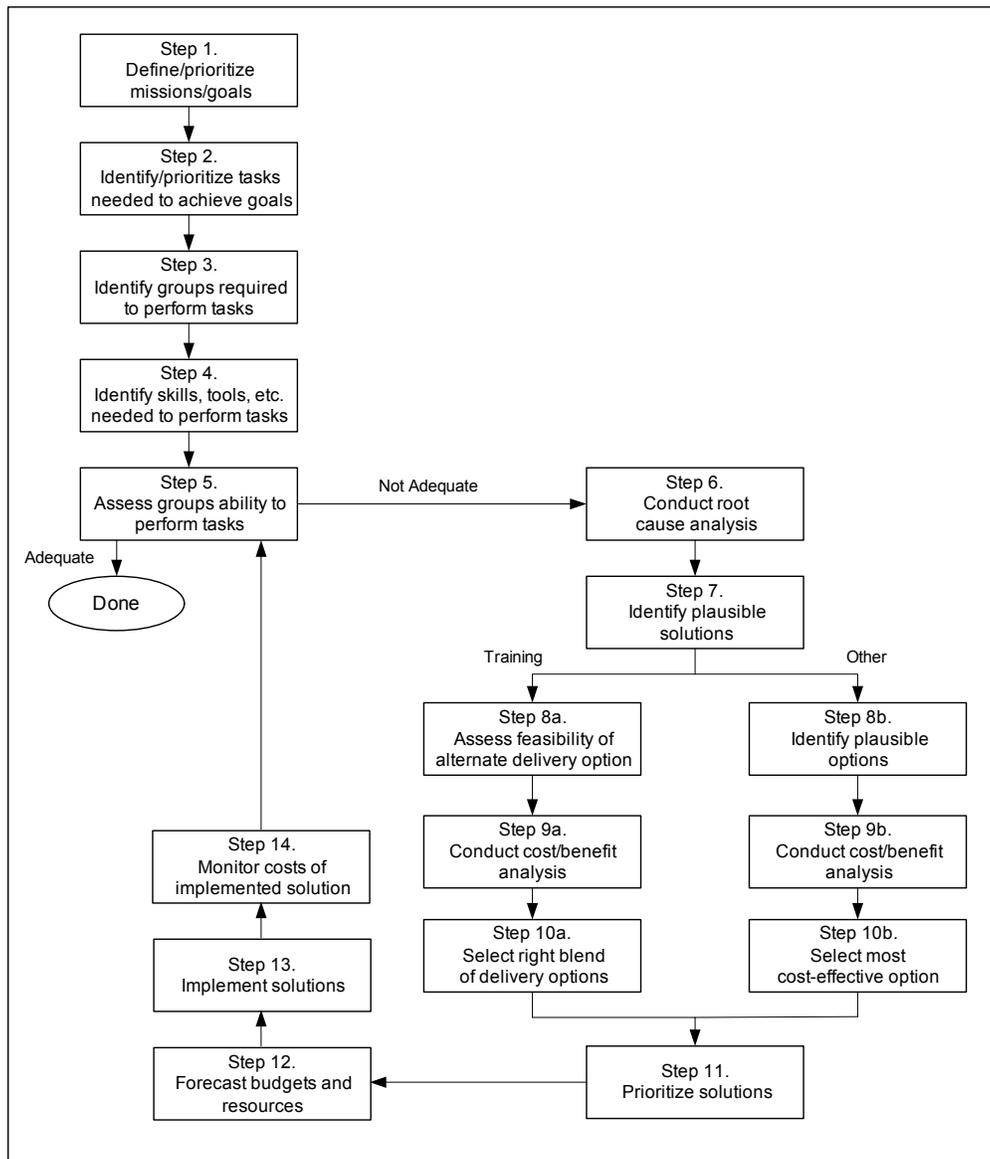


Figure 1. Flowchart of Proposed Analysis Process

Phase I: Discovery

The objective of this phase is to uncover the costs and resources allocated to each training program, and how these are supporting the overall unit's/organization's missions/goals. This initial phase involves gathering cost and resource data on each training program and documenting the relationship between training program and organizational goals. To evaluate the effectiveness of training programs, as well as the feasibility and potential impact of utilizing alternate delivery options in the organization, both learning and learner requirements should also be identified.

Phase II: Strategize

Once the units'/organization's missions/goals have been articulated and the potential impact of each training program validated, training program managers may then identify what worked and why, detect problem areas, assess the impact of alternate delivery options and potential risks, evaluate build versus buy decisions, evaluate the use of internal versus external resources, and consider multiple what-if scenarios.

Phase III: Prioritize

Distill the results from Phases 1 and 2 above into an action plan that can provide a clear picture of which training programs are generating the greatest impact and why, which programs should be funded, and how success (i.e., *the trainee's ability to achieve desired performance*) should be measured. This action plan should provide the entire team a context from which to evaluate the success of their efforts.

Phase IV: Optimize

More than a "point in time" exercise, measurement and optimization becomes a perpetual process engrained in each initiative. Eventually, a powerful database of what is working, and where to invest future training dollars for maximum efficiency will be built, and this will become an even more powerful basis for future decision-making over time.

CONCLUSION

We have presented six strategies to potentially maximize the benefit (value) of training budgets and resources – by assessing the impact of training programs during the planning phase, identifying

venues for increasing effectiveness while reducing costs, as well as providing performance-based measures for monitoring progress during the implementation phase.

In addition to the overwhelming anecdotal evidence that supports the need for such a predictive model in managing training budgets and resources, our proposed strategies address the following critical issues that historically drain over 90% of typical training budgets and resources.

- Less than 10% of training expenditures actually result in transfer to the job (Ford & Weissbein, 1997). By focusing only on the most important initiatives, waste may be reduced and impact of training maximized.
- Most of the knowledge and skills eventually gained through training (well over 80% by some estimates) is not fully applied on-the-job (Broad and Newstrom, 1992). By some accounts, less than 30% of what is learned (in training) actually gets used on the job (Robinson, 1998). By focusing only on those solutions that clearly resolve identified performance deficiencies, waste may be minimized and performance maximized.
- Over 90% of training content is typically delivered through informal means – such as via web searches, chats, reference materials, and mentoring (Dublin, 2004). Providing the right information to the right individuals at the right time "learning at the speed of work" can significantly increase the competitive advantage of the organization – allowing individuals to do things they have not been able to do before.
- Published case studies by IBM (Gram, 2001), Cisco, and others have consistently reported that using the right blend of delivery options will reduce costs and maximize impact of training programs.
- In an effort to reduce costs and focus on core business, organizations such as Nortel Networks, Goodyear, and others, are outsourcing training management, training development, training delivery, and training administration and support. By capitalizing on the strengths of internal and external resources, the impact of training programs may be maximized while still reducing costs.

- Identifying and replicating high performance programs that are considered “centers of excellence” is a strategy that has been effectively used by many organizations to improve their system performance and incrementally reduce costs. By comparing the costs and benefits of successful training programs run by various training program managers, units, and vendors, highly-efficient training programs can be used as a benchmark for development of other successful programs, and/or for correction of problem areas.

In practical terms, we offer as a rule of thumb that where units are required to spend \$1 million annually on direct formal training costs, the total annual training costs will add up to over \$6 million – a average factor of six times the direct costs (premise supported by Bassie and Ahlstrand, 2000) – once the indirect costs of support staff, overhead, equipment and lost productivity are accounted for. In this case, a modest 10% annual savings, would translate into \$600,000 – a not unremarkable figure. Better yet, what would a 10% increase in mission success, or 10% reduction in mission failure due to, for example, accident, operating failures, or other factors add to your bottom line?

REFERENCES

- Bahlis, J., Daigneault Denis & MacArthur, Eric, “How to Implement eLearning in Your Organization”, Teleforum, Montreal, QC, 2002.
- Bassie, J. Laurie & Ahlstrand, Amanda, The 2000 ASTD Learning Outcomes Report, 2nd Annual Report on ASTD’s Standards for Valuing Enterprises’ Investments.
- Broad, M.L. & Newstrom, J.W., “Transfer of Training: Action-Packed Strategies to Assure High Pay-Off from Training Investments”, Addison-Wesley Publishing Co., Reading, MA, 1992.
- Burke, Warner (2002). *Organization Change: Theory and Practice*, Sage Publication.
- Dublin, Lance, “The Blended Learning Tune-up: Getting to Peak Performance”, CSTD Online Symposium, April 26, 2004.
- Ford, J.R. & Weissbein, D.H., “Transfer of Training: An Updated Review and Analysis”, *Performance Improvement Quarterly*, 10 (2), 22-41, 1997.
- Gilbert, T.F. (1996). *Human Competence: Engineering Worthy Performance*, Amherst, Massachusetts, HRD Press Inc.
- Gram, Tom, “Basic Blue for Managers: An innovative eLearning Solution”, OSTD e-learning Symposium, April 23, 2001.
- Harless, Joe (2000). *Analyzing Human Performance: Tools for Achieving Business Results*, Arlington, Virginia, American Society for Training and Development.
- Kaufman, Roger (1996). *Strategic Thinking: A Guide to Identifying and Solving Problems*, Alexandria, Virginia, American Society for Training and Development and the International Society for Performance Improvement.
- Kirkpatrick, D.L. (1994). *Evaluating Training Programs: The Four Levels*. San Francisco, CA: Berrett-Koehler.
- Mills, Gordon, Pace, Wayne & Peterson, Brent (1988). *Analysis in Human Resource Training and Organization Development*, Don Mills, Ontario, Addison-Wesley Publishing Co. Inc.
- Phillips, Jack (1997), *Return on Investment in Training and Performance Improvement Programs*, Gulf Publishing Company, Houston, Texas.
- Pipe, Peter & Mager, Robert Frank (1999). *Analyzing Performance Problems: Or You Really Oughta Wanna*, Addison Wesley Publication.
- Robinson, D.G. & Robinson, J.C., “Moving From Training to Performance: A Practical Guidebook”, Berrett-Kohler Publishers Inc., San Francisco, CA, 1998.
- Rummler, Geary & Brache, Alan (1995). *Improving Performance: How to Manage the White Space on the Organization Chart*, San Francisco, California, Jossey-Bass.
- Stolovitch, Harold & Keeps, Erica (2004). *Training Ain’t Performance*, Arlington, Virginia, American Society for Training and Development and the International Society for Performance Improvement.
- United States, Department of Defense (2001), *Military Performance Specifications, Training Data Products, MIL-HDBK-29612-2A*.
- United States, Executive Review of Navy Training (2001), *Revolution in Training*.
- Zemke, Ron & Kramlinger, Thomas (1982). *Figuring Things Out: A Trainer’s Guide to Task Needs and Organizational Analysis*, Persus Books.