

# **Bortz's Learning Module: An Alternative Approach to Training Program Curriculum Development**

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## **ABSTRACT**

*The authors examine challenges to Instructional Systems Design (ISD) and propose an alternative approach to training curricula development. The purpose of this conceptual paper is to describe Richard Bortz's Learning Module, discuss the need for the module, and present the benefits of the module compared to the traditional ISD approach. Finally, the authors provide an introduction to a new training curricula tool that researchers and practitioners can utilize in their efforts to improve training effectiveness.*

## **INTRODUCTION**

We are forever in search of developing and delivering meaningful training. This quest essentially led to the advancement of the most recognized and renowned curriculum training development model that has been developed called Instructional System Design, more widely known as ISD, is a set of specific tasks designed to guide trainers toward making a finished training product. Marc Rosenberg (1982), author of *The ABC's of ISD*, says the model "provides a procedure for systematically identifying and manipulating significant components which make up the instructional process, the goals of which are increased learning and improved performance" (pg. 44). ISD works with a goal in mind, and if all of these components of the ISD model work in harmony, then the result of training should not only be a meaningful experience, but an effective one.

Over the past 10 years, researchers and practitioners have identified challenges to the effectiveness of the ISD approach (Gordon & Zemke, 2000; Zemke, 2001). Thus, pointing out that there is a growing recognition of the practical usefulness of ISD in training curriculum development. Further, a significant issue for researchers and practitioners is the identification of a training program development model that leads to effective training. Identification of such model would enable curriculum developers to improve the effectiveness of training. The purpose of this conceptual paper was to contribute to a better understanding of training program curricula development. More specifically, the purpose of this paper was to introduce Bortz's Learning Module. This paper contributes knowledge to training curricula developers by adding to the existing literature and attempts to provide evidence that Bortz's Learning Module is an alternative method for training development. Further, this paper will enable researchers and practitioners to utilize a new tool to improve the effectiveness of training.

## **REVIEW OF LITERATURE**

### **History of ISD**

The roots of ISD date back to the 1950s and to an idea called learning psychology. The pioneers in the field of learning psychology point to the work of Skinner (1954, 1958) "who proposed the

revolutionary idea that small-step instruction, coupled with extensive feedback, could significantly enhance learning” (Rosenberg, Coscarelli, & Hutchinson, 1999, pg. 26). Skinner, a behavioral psychologist, developed the idea of *programmed instruction*, and his ideas led to the development of the first learning machines, which included other concepts such as task analysis, behavioral objectives, and criterion-referenced evaluation. However, when the 1960s moved into the 1970s, what we know as basic ISD came to be. Cognitive psychologists also contributed to further developing certain aspects of ISD in its earliest forms. Bloom (1956), was accredited with organizing learning objectives, in reference to what the learner is expected to do and achieve during a training activity, while Glaser (1966), Bruner (1969) and Gagne (1970) are known to have investigated the link between the learning process and instructional events.

The ISD process is directly applied to learning, and once it became settled on its foundation, the ISD process sought to attack the problem of both ineffective and inefficient training programs. Furthermore, the world had changed dramatically, especially during the two world wars and the following demands of society and the incredible growth of knowledge led to a new and dramatic need to train large numbers of people in a short amount of time. This need thus led to the development of audiovisually based instruction, a significant breakthrough in itself and was found to be able to teach as well as people could (Rosenberg, Coscarelli & Hutchinson, 1999).

### **ISD Step-by-Step**

These new breakthroughs in ISD development helped create a generalized and systematic model for the training professionals who actually used the model. The ADDIE model, made up of the following steps: analysis, design, development, implementation, and evaluation, is one such systematic model and probably the most well-known ISD model to date. According to Rosenberg, Coscarelli, and Hutchinson (1999), there are many forms of ISD models in practice, but most models can trace their roots back to the ADDIE model or accept it as a foundation.

The importance for some kind of structured and logical model in which to guide trainers in developing training curriculum has never been questioned, and the ISD model has been at the pinnacle at such a curriculum for ages. So much so that Ph.D. programs are based on it, and through the years, it has become “the bible and guiding paradigm for Fortune 500-size companies, corporate universities and training departments across the world” (Zemke & Rossett, 2002, pg. 30). Rosenberg (1982), advocates that “the basic model is simple to understand and easy to use in almost any training environment” (pg. 44).

In the first step, an analysis or research takes place to investigate a gap in performance. Essentially, the purpose of this phase is to define the problem by “precisely specifying the training needs which exist and turning them into useful information for training development” (Rosenberg, 1982, pg. 44). This task sounds easy enough, but trainers providing opinion on training needs is neither reliable nor harmless when you consider the time and funds devoted to the training program. Fortunately, says Rosenberg, “the model requires that suspected training problems be analyzed first to determine their *exact* nature” (pg. 44). This analysis is often called a needs assessment and is further broken down by determining organizational needs, learner needs, and job needs. Organizational needs are mostly global in nature and seek to improve the whole organization by increasing productivity, for example. Learner needs deal more so with the training problem, and an analysis of learners might include intellectual or academic background, technical knowledge, previous experience or training, and abilities related to the task, age, sex, physical disabilities and any current or expected job performance deficiencies. Job needs analysis concerns the exact performance requirements to complete the task. Evaluation at this step decides how well the research has been collected. This research becomes the key element for the next step in the ISD process.

In the second step, also known as the design phase, a framework is established as an input to the creation of training materials and strategies. Instructional objectives are also an input and are derived from skills and knowledge. They are also specified only in measurable and observable terms by describing the type of behavior deemed as mastery of the task. The outputs of the design phase are equally important, and they determine the specifications of testing, materials, and instructional strategy. Test specifications are compared to the instructional objectives and this provides further validity. Materials specifications cover the materials that will be offered to the learners during training, and instructional strategy determines how the training will be delivered (instructor-led, group-paced, or individualized). Evaluation of this phase is done by determining how well the needs have been translated into training.

The third step of ISD is the development phase and the specifications that were the outputs of the design phase have now become the inputs of this phase. There are many outputs of this phase and the evaluation of these outputs is critical to the success of training. Outputs such as tests, media, simulators, equipment, student materials, and instructor materials should all be evaluated to determine effectiveness and efficiency of communication to learners. In the case of tests, Rosenberg (1982) recommends developmental testing which would include a review of content by subject matter experts and also determining relevance, accuracy, completeness, ease of use, ease of understanding, and allowing time for a pilot test before full scale implementation.

The fourth step is the implemental phase of the training; trainers are now able to not only observe, but to evaluate training in its actual conditions. The inputs to this phase are such things as the training instructor, course components, and the training facility or training environment. Evaluation of this phase is short-term in that the evaluator is concerned with readiness and effectiveness at all times, and evaluation is long-term in that there must be concern with possible deterioration of training. This concern for the long-term is what must be taken seriously after training has long been over if an organization doesn't want to end up right where they started.

Rosenberg advocates that the model is not just a series of steps, but a relationship between events. Rosenberg (1982) states, It is this relationship which makes the model so effective in its application to training development. It assures that a decision to develop training is based upon the realistic and identifiable needs of the organization, the learner, and the job. By setting clear and measurable instructional objectives, the design and development of training which relates to those needs can also be measured. Through the constant testing of materials, problems in the training program can be quickly identified and remedied. And, by monitoring the application of the ISD process itself, improvements in training development procedures can be realized. (pg. 50)

### **Criticisms of the ISD Model**

Volumes have been written and classes conducted on the proper way to execute the model. Disagreements over the actual effectiveness of the model have flourished, and while we *absolutely* have to have a framework in which to guide trainers in the development of training curriculum, Zemke observed "99 out of 100 times interesting, creative and successful instructional programs are developed by people with no ISD background on training" (Zemke, 2001, pg. 32).

However, the idea that ISD could be flawed is one that is hard to swallow for people who have been developing training programs based on the model for many years. Defenders of the model believe that ISD is only being attacked because it is and has been difficult to define, it continues to change, and any problems that arise are associated with the wrong version of the model. Some critics of ISD charge back

by saying the following: In theory, the process starts and ends with a specific business problem—a performance gap that matters deeply to the organization. In theory, the relentless concentration on using instruction as a means to solve concrete real-world problems is the great difference between training and education. In practice, critics charge, ISD encourages a blind preoccupation with means over ends. Too often, they say, the first thing lost in the ISD process is the only thing that really matters to anyone in the organization except the trainers: the business problem that was supposed to launch this whole creaking apparatus in the first place. (Gordon & Zemke, 2000, pg. 43)

One of its other weaknesses is that the model has been deemed slow and clumsy. While it may have been both effective and efficient to teach several a million draftees how to disassemble, clean, and reassemble a M-16 rifle or teach hundreds or even thousands of factory workers to perform rather simple tasks on assembly lines year after year, times have changed. Gordon and Zemke (2000) explain: If the model is too sluggish for speed-maddened world, it isn't necessarily because of anything ISD has to say about how learning works or how to teach someone to perform a task. But a great deal of the classic ISD process has more to do with project management than with learning, per se. (pg. 43)

How is ISD slow? In today's fast-paced world, 30 days might as well be 30 years. Thiagarajan reports for *Training* magazine, One of my grad students was talking to a client recently, pitching the classic ISD approach to teaching people something about some software. 'The needs analysis will take a month and a half,' and so on. The client said, 'By that time, we'll be on two later versions of the software package' (Gordon & Zemke, 2000, pg. 43). Furthermore, more project management is taking place instead; maybe 90% of training development is spent on getting objectives written and approved as well as managing higher-ups who are approving training funds. Very little time is actually spent on training. In the end, ISD just takes too long and exploiting the opportunity has passed.

Another weakness is that the model is really just the result of the long and valiant effort of turning training from an art into a science. The ultimate goal was to create a "technology" around the model, which would generate reliable results in learning. Yet the question remains that if we veer off from ISD's explicit instructions for learning, and people still learn—is there really a technology in place? "Pretending that the model represents a real technology can lead you into trouble because training actually is not—and was never meant to be—a lock-step, engineering-like method" (Gordon & Zemke, 2000, pg. 48). And it was just this engineering-like approach that got us in this fix. Diane Gayeski, a professor of instructional design, argues the ISD model should never have been viewed as: Something carved in stone, an algorithm of set steps. It was something that Simplified what we were doing, strictly for teaching purposes. But along the way it became an attempt to legitimize the training profession by coming up with a process that sounded 'scientific.' We were working with engineers, and we wanted to look and sound like engineers. That was a mistake. (Gordon & Zemke, 2000, pg. 48)

Furthermore, in the model's eagerness for lay out steps to proper instruction, it can sometimes fail the most important question: How do we know when we've developed good training? If our only answer is that it's developed using the following process then what we have may be nothing at all.

Yet another weakness of ISD has been phrased, 'use as directed, and it will produce bad solutions.' Critics believe that a strength of the model is that it offers discipline in a field where there is no discipline, but that it's the wrong discipline. In other words, in ISD theory, there's a goal in mind, but is it the right goal? In ISD practice, "part of the problem, as we've seen, is that inward focus that concentrates the designer's attention on building the 'right' kind of training instead of addressing a real business issue" (Gordon & Zemke, 2000, pg. 51). Too much consideration is given to learning styles and classroom effectiveness instead of any kind of client expectations. Moreover, says Gordon and Zemke (2000): Even

if you disregard the performance outcome that a training program is supposed to produce and look at it strictly as a learning experience, ISD produces a lot of bad training... the process tends to create boring cookie-cutter programs geared to the slowest and most ignorant learners in the audience. (pg. 51)

Finally, critics also believe the ISD model clings to a wrong world view. Thiagarajan says, “The whole ISD model is based on the assumption of stupid learners and superior experts” (Gordon & Zemke, 2000, pg. 52). The idea isn’t just arrogant, but it’s silly and it contradicts what we actually know about adult learners’ ability to manage their own learning and their motivation. According to Gordon and Zemke (2000), educational researcher, Allan Tough, has studied the various ways adult learners *want* to learn. His most recent data has found that: the average working adult conducts eight self-directed learning projects every year and will invest more than 100 hours in each. He also found that adults prefer learning that is self-paced and is flexible. These findings prove that the learners that will represent the audience in training programs for years to come have an investment in their learning as well as personal motivation.

Gayeski agrees that “knowledge resides all over the place, and you’ve got to create mechanisms for conversations—for mutual teaching and learning—rather than for better top-down information feeding” (Gordon & Zemke, 2000, pg. 52). Another weakness is that there is some master or ‘pro’ to do the task at hand, when that’s just not the reality. In today’s environment, a job is not a known quantity. In practice, the procedures and jobs are up in the air, and there are often no *best* practices to send down the line. According to ISD, when we encounter a performance gap, it’s due to the deficit in the *expected* results produced by people with well-defined jobs. However, if these people were not given any best practices or standards on which to base their performance in the first place, what happens next is hasty problem-solving.

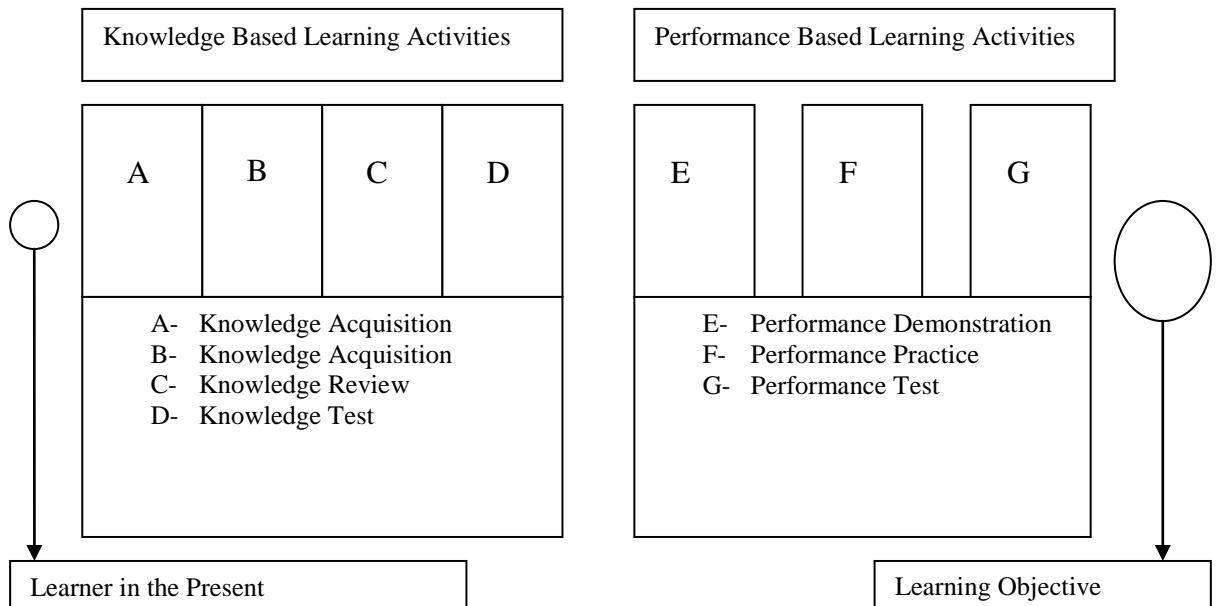
But still, critics to the ISD process believe that ISD is only meant to be a guide; furthermore, “ISD advocates, in their enthusiasm for the process, have over-sold the robustness of that process. In fact, like economics or even medicine, ISD is more an assemblage of rule of thumb and common practice than a pure science” (Zemke & Rosett, 2002, pg. 34). The critics have admitted that any alternatives to the ISD approach aren’t quite as ‘fleshed out’ as is their critique. But a few say that “considering the kinds of training challenges that are likely to prevail in the years ahead, however, we’d best get used to thinking more flexibly about instructional design than we have in the past” (Gordon & Zemke, 2000, pg. 53).

### **Bortz’s Learning Module**

Without a doubt, we need a solid and logical framework for which to design training. Richard Bortz’s Learning Module (or the Learning Module) is a new beginning to a training curriculum, and it can even offer flexibility to learners. It is comprised of two phases with a total of seven steps, taking a learner from a present state of knowledge acquisition to reaching (mastery of the intended learning objective) the learning objective. It is only after the learner passes *all* of these steps that the learner has successfully completed the Learning Module. Like ISD, the Learning Module is designed to develop effective training, but the Learning Module can actually deliver it *in practice*. The module provides a means of which learners can gain significant knowledge about the task that they are being trained to do, and they are also able to practice and finally master the task in the final steps.

There are two separate phases of the Learning Module—a Knowledge Based Learning Activity and a Performance Based Learning Activity (see Figure 1). Bortz (1981), defines these as: Activities performed by a learner en route to attaining a particular objective... they guide and direct the learner from a point in time of not being able to perform a given objective to a point in time when he or she can perform the stated act. (pg. 99)

The first aspect of the Learning Module is the Learner in the Present. It is important to understand and determine at what level learners are in the beginning of training, because trainers need to develop a Learning Objective that is to be achieved by training's conclusion. Trainers also need to make sure that the Learning Objective can actually be reached based on the training's activities presented in training. Thus, there must always be evaluation on the Learning Objective to determine its potential. Below is a diagram of the Learning Module.



From: Bortz, R. (2000). *A Conceptual Model for the Organization and Development of Workplace Education Curriculum*. Manuscript submitted for publication.

**Figure 1: Bortz's Learning Module**

In steps A-B, Knowledge Acquisition is described as the detailed and thorough instruction of all the appropriate information that is important to the training topic, and this information is especially specific to what knowledge the learners have in the present. Knowledge Acquisition can include background information about the topic, present state of the topic in terms of introducing this new behavior in the workplace, and any specifics about the behavior. For example, if training is taking place to introduce employees to a new procedure on a specific type of equipment, learners would be introduced to the basic information on the equipment, what the new procedure entails, any and all steps that make up the new procedure, why the procedure is important, ect. The Knowledge Review step is composed of extensive review over all the information presented in the Knowledge Acquisition steps. And finally, learners would then take a Knowledge Test, which would assess whether learners have indeed retained the information presented to them in the previous two steps. The Knowledge Test needs to be reviewed and checked for validity and reliability before implementation.

Again, the main stipulation of the Learning Module is that in order for the learner to have successfully completed the module, he/she must complete all the steps. But the other side of this stipulation is that if the learner does not pass the Knowledge Test, he/she cannot continue to the next step; rather, he/she must begin at the beginning of the Knowledge Acquisition step again. The Learning Module developer should identify the knowledge achievement level of the Knowledge Test prior to the

administration. If the Knowledge Test is passed, learners continue to the Performance Based Learning Activity. This phase is the point of training where learners are able to actually apply their learning in a hands-on environment. Learners are first presented with a Performance Demonstration. In this step, learners are able to observe a demonstration by current employees doing the actual procedure with the proper technique. (As stated earlier, depending on the task, sometimes there just isn't a 'pro' to demonstrate the proper technique or best practice; therefore, in this step, learners can have the opportunity to observe more than one employee for information. Thus, the module creates Gordon and Zemke's 'mechanisms for conversations' to facilitate learning.) Learners are then able to Practice the procedure. Finally, learners are administered the Performance Test, where they must prove that they can effectively perform the proper procedure, or as Bortz (1981) defines it:

The performance test is the last in the series of learning activities that the learner must successfully complete to demonstrate his or her ability to perform the learning objectives... it is designed to measure the learner's ability to synthesize knowledge, judgement-making skill, and psychomotor performance into a single act. (pg. 215).

If learners have passed both the Knowledge and Performance Tests, the Learning Objective has been mastered. This module can provide a comprehensive context for training curriculum design. It allows learners to gain knowledge about a specific subject and then gives them the opportunity to actually perform what they have been thoroughly trained to do before being released into the workplace on their own.

## CONCLUSION

Bortz's Learning Module can be the new generation of ISD in that it explicitly seeks results from its learners. ISD has not failed across the board for all these years; it has produced results, but the weaknesses explained earlier have shown why it just doesn't always perform in today's working environment. Furthermore, the Learning Module incorporates several attributes of a good ISD model. Gary James, in his article *Take the ID Road to Success*, names several ISD principles that can equal success if applied: "conditions during training should increasingly approximate conditions on the job... select a test item that gives learners the best opportunity to demonstrate the skill or action specified in the objective... [and] have learners practice as much as possible under conditions that reflect their real-world performance situations" (James, 2001, pg. 16). These are all qualities possessed by Botz's Learning Module.

The Learning Module can also challenge the ISD weaknesses with its own strengths. While hardcore defenders of ISD are quick to say that ISD is hard to define, the Learning Module is anything *but* hard to define. The reality is that results of training from the Learning Module are in plain sight. The module gives trainers the opportunity to provide learners with valuable information as a tool for success in the workplace, and yet another tool for success is the opportunity for learners to practice their new skills before being on their own. This succinct training program development approach is clearly defined by allowing learners to understand the new environment to which they are about to be introduced (during the Knowledge Based Learning Activities) and then making sure they can effectively and successfully perform in that environment by the end of training (during the Performance Based Learning Activities).

Is the Learning Module slow and clumsy? No training program can be put together at the snap of a finger, but the module does not require a significant and perhaps cumbersome analysis phase that would take the bulk of the preparation time in the ISD approach. The Learning Module does require time to

gather the appropriate Knowledge Acquisition material, as any missing information can cause great workplace ‘trauma’ later. In order to gather this information, trainers can observe the current procedures, create focus groups, and organize meetings with equipment designers, etc. to gather the necessary information. But this step (nor are any of the others) is not supposed to take the extreme amount of time as perhaps ISD can. The Learning Module allows trainers to be quick in development, while still providing excellent training. Put together effectively, the module will provide trainees with the knowledge behind a task and a hands-on learning environment in which to apply the knowledge.

Is this module a technology? If a ‘technology’ is defined as creating the environment where people learn, then the Learning Module is, in fact, a technology. We can get this guarantee by gathering data at the end of the Knowledge Test and the Performance Test. But as for whether the training profession *needs* a technology or needs to legitimize the profession now seems to be the debate. What is more important is that the Learning Module can answer the vital question: How do you know when you have delivered good training. The answer is simply looking at the data. How many people have passed the Knowledge Test and then passed the Performance Test? And if they had to begin training again, did they pass the second time? Further analysis could examine the predictive validity of the knowledge test in relation to the performance test or actual work setting. Overall, the number of people who have mastered the Learning Objective and have successfully gone through training is proof of good training as is the proof of trainees *actually* demonstrating their skills.

Will the Learning Module address the real business issue or will it seek to produce the ‘right’ kind of training as ISD may do? There are no cookie-cutter training programs with the Learning Module as the Knowledge and Performance Based Learning Activities make it very specific to each training topic. To this end, the module itself can address the real business issue because it seeks to make a change in learners by the end of training. And as business is always important, results are always available by the end of training as to the number of people who have succeeded and mastered the Learning Objective. Remember Zemke and Gordon’s (2000) statement: “even if you disregard the performance outcome that a training program is supposed to produce and look at it strictly as a learning experience, ISD produces a lot of bad training (pg. 51). The truth is that the Learning Module demands that learners pass the performance aspect before they are considered graduated from training, something ISD doesn’t attempt to iterate.

And finally, does the Learning Module cling to the ‘wrong world view’? Certainly not, as learners are given the opportunity to apply their knowledge and there is actually very little top-down “boring” instruction. Basically, if learners can do it, they are given the chance to prove it. Instead of top-down instruction, the Learning Module can be flexible and creative to consider their audience members—their learners. Tough’s findings about adult learning is interesting in that we can’t escape what adults *want* in their training because it’s essentially what can motivate them. The Learning Module *can* be flexible by allowing self-paced learning during the Knowledge Based Learning Activities. The module can also make for creative and flexible activities which would accommodate Tough’s findings. One of these findings suggests that adults would like it if learning can be flexible or easy to change. The Learning Module can work with this as well by allowing learners different options in which to complete training: one-on-one with a supervisor or fellow employee, in a group setting, or with a partner. Some aspects of the module (like the assessment portion) require individualized activity, but other aspects can be flexible to accommodate various learning styles. In essence, if the trainers take the time to get to know their audience, the module can be successful and appreciated on many different levels.

Kent Gustafson, Professor Emeritus of Instructional Technology says, “Compromise is one of those words we don’t use very often with our students. We don’t teach them anything about efficiency and we do a lousy job of preparing them for the real world” (Zemke & Rossett, 2002, pg. 28). ISD may have seen better days, but it doesn’t mean that the model’s failures have outweighed its successes. We have no way of knowing that, but most of the critics agree that having the ISD model up to this point was better than having nothing at all. However, Bortz’s Learning Module can make the cut in today’s fast-paced, high-knowledge environment. We are in need of a solid training framework that will steer training into efficient, effective, and engaging programs again. The Learning Module doesn’t seek to bog down trainers in unnecessary mini-projects that hide the real goal of training objectives or misunderstand the current state of knowledge as learners walk into training; the module is designed to bring results—it is after all what training is meant to do.

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