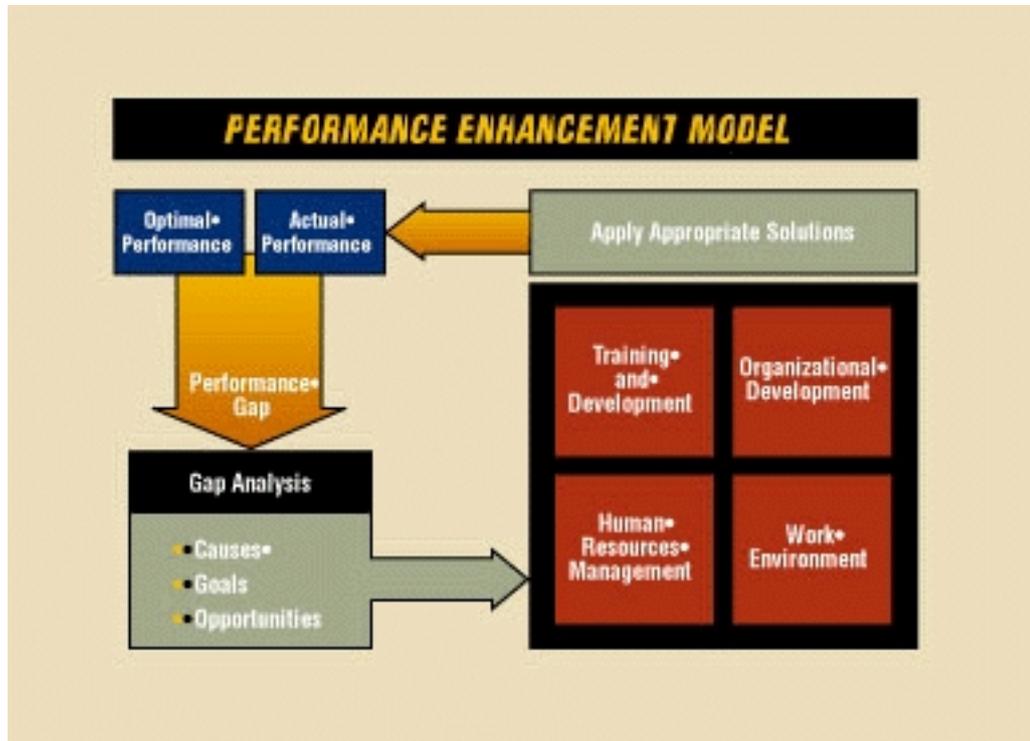


Reliability Performance Enhancement: Doing the Right Training Right

Written by Richard W. Lowell, HSB Reliability Technologies
Thursday, 01 June 2000 09:29

The bottom line is that equipment reliability and overall productivity are improved by leveraging your employees' knowledge, skill, and behavior.



How much do you really care about the training your employees receive? After all, training is expensive and it takes important supervisors and workers out of the plant site, reducing the overall productivity of the work force. Training is rarely important (except for safety), and rarely contributes a significant return on your investment in time, money, and people. In some cases you may even have to "un-teach" some of those new skills just so you can keep things moving the way they always have. After all, training is not one of those production and maintenance problems that keeps plant managers awake at night.

If you believe all that, you are living in the dark ages.

What you don't know can hurt you!

HSB Reliability Technologies has analyzed hundreds of manufacturing facilities over the years. One of our findings is that 40 to 60 percent of all maintenance work, whether in cement plants, steel mills, or oil refineries, did not need to happen (Focusing on Preventable Maintenance, MT 10/95, p 23). Of those "preventable maintenance" actions within the purview of the production

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and maintenance department, 30 to 60 percent could be attributed to human performance deficiencies, meaning a lack of, or improper, training, insufficient training, or inadequate human factors engineering (job aids, incentives, and environment). Further analysis discovered that when expressed in terms of hours worked or cost, the work that should not or need not have been done exceeds necessary work in some cases by a margin of 3 to 1. This is a significant expense, all for the lack of a few hours of instruction.

No matter how you slice the pie, unnecessary or preventable maintenance caused by training deficiencies is expensive, both in terms of labor and material and, even more significantly, in the lost opportunity cost of employees not given the knowledge and skills they need to fully function to the best of their ability. So now that we know how important training is to improved equipment and process reliability, how do we know what training to do? How do we set up our training to provide the outcomes we want? How do we determine if training is even the right expenditure of time and funds to insure we get the results we want?

Human performance enhancement

Performance enhancement or technology is a systems engineering approach using behavioral science techniques to analyze, design, and deliver activities which promote human performance in achieving the business goals of an organization. Performance enhancement is not just training, or organizational development, or human resources management. It is a synergistic process that seeks to optimize human reliability using a wide variety of tools. Human reliability is the total of all the effort that each individual contributes to decrease the variability of a process.

For example, using a job aid or standard operating procedure reduces the chances that a pump will be started wrong, or a seal installed backwards. The job aid also helps to reduce the experience gap between master and apprentice craftspeople. Training operators and craftspeople to use those procedures further decreases human variability, thus helping to eliminate preventable maintenance. By keying reward and incentive systems to procedure usage, you further heighten the desired performance. At each step you are defining and assisting the "people part" of the process. The bottom line is that equipment reliability and overall productivity are improved by leveraging your employees' knowledge, skill, and behavior.

In the accompanying "Performance Enhancement Model," various solution systems are shown. This type of analysis is also called "gap" analysis because you start by determining the "gap" between the actual performance being demonstrated and the optimal performance that you desire. Once you know where you are and where you want to go you can determine what it will take to close that performance gap.

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Next ask why that gap exists. Has there been a change in technology? Has there been an organization or motivational change that has affected how people perform? If it is not a knowledge or skill problem, then training is not the answer. Don't waste time or money trying to drive a screw with a hammer.

Once you know what has caused the gap then you can select the appropriate training or non-training strategies to correct the problem.

But don't stop there. In every process or engineering system there is a feedback loop that allows you to measure if the step you took was effective. A human performance system is no different. You must measure whether the performance intervention was appropriate and that the gap has been closed or the problem solved.

Training for performance

Having determined that training is required to improve the performance of your maintenance staff, where do you go now? Start with a Training Needs Analysis (TNA). The TNA helps you determine what kind of performance you're after and dovetails with the performance enhancement model to provide training-specific outcomes that are required for a specific employee, craft, or responsibility. See "Training Needs Analysis or Assessment" section.

Once you have completed your TNA, you need to convert your findings into actions, to move beyond "touchy-feely" training to instruction that delivers bottom-line performance results.

Start training program development by gathering basic information: the training mission, core program goals, and operational or maintenance requirements. This will clarify the business outcomes and tie your training to a specific problem. This gives your training a target or goal right from the start and keeps it in alignment with the organization's vision. Remember, a training program that makes you feel good about yourself is nice until you walk out the door and get back to the plant. What counts in the plant is not "warm fuzzy's" but cold, hard knowledge and skills that can be wielded in daily business battles. Here are some examples of bottom-line skills:

- Produce measurable gains (state what goal you want to achieve) in production

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productivity by improving changeover procedures to decrease time.

- Decrease downtime due to maintenance by reducing the cycle time of maintenance through improved planning.

- What you are after is training that produces results, that increases performance, that leaves in its wake a stronger, more robust individual or team than the one that walked into the classroom. It's all about action, about the "rubber meeting the road," about implementing learned behavior that produces tangible rewards. To foster this bottom-line behavior, incorporate an action orientation in the training's learning methods:

- Provide learners the opportunity to detail what they will do differently back at the job site. Help them develop an action plan.

- Tailor the activities within the course of instruction to be skill-building activities that practice the desired performance. If you're teaching maintenance planning, plan a real job with constructive feedback from not only the instructor, but also the entire class.

- Trainers, facilitators, or coaches should develop engaging and realistic simulations that allow learners to be involved in the behavior to be modeled.

- Whenever possible (and safe) use practical content drawn from real life. Try to avoid theory and examples that do not relate to the industry or problem at hand.

- Use activities and methods with a bias toward action. Get people moving with exercises that stimulate all learning modalities (audio, visual, and kinesthetic). Develop with the trainer and the employee's supervisor measures that demonstrate personal results and a bottom-line contribution, not just how happy they felt following the seminar or workshop.

Performance enhancement is giving your people the resources they need to succeed, not just handing them tool belts and saying go fix it. **MT**

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Training Needs Analysis or Assessment

There are five phases in this process:

1. Preliminary data gathering. This step establishes the goals of the assessment and enables you to obtain a broader perspective about training needs. In this phase the majority of time is spent reviewing past assessments; interviewing cognizant managers, end users, subject matter experts, or internal customers; and establishing a foundation of how the proposed

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training relates to business goals.

2. Planning. During this step, you determine what types (maintenance, productivity) and sources of data (CMMS, subject matter experts) to collect as well as what type of analysis to perform (comparison of knowledge or skills, attitude toward change). You can develop specific assessment instruments as well as use generalized tools in order to minimize development time and reduce expense. You must stay on target.

3. Conduct assessment. This is the actual assessment step where you conduct surveys, interviews, background research, and focus groups. During this phase you will determine current knowledge and skill levels, desired knowledge and skill levels, what training materials, if any, are in existence, and if non-training interventions such as job aids can be used.

4. Analyze data. This is a sorting procedure where data is reviewed for discrepancies or deviation and a qualitative and quantitative response is prepared.

5. Prepare report. Take the compiled data and put it together in an acceptable format.