

Productivity and Human Performance -Completing the Continuous Improvement Spiral-

**William Swart and Steve Duncan
East Carolina University
Greenville, NC 27858**

Abstract

Sustained success in business requires continuous improvement in productivity. The development of productivity enhancement concepts is an ongoing activity that most often falls under the responsibility of units such as industrial engineering, operations research, quality assurance, or engineering services. Once developed, these concepts are typically turned over to a training unit who will develop the training program(s) intended to provide the workforce with the knowledge to implement the productivity concept. When implementation fails to deliver the anticipated benefits, trainers tend to blame concept developers for trying to apply theories that do not work in the real world while concept developers tend to blame trainers for discarding or relaxing essential components of the concept for the sake of expediency. What both camps tend to ignore, and is addressed in this paper, is that workers who have received appropriate training for implementing a new productivity concept may simply choose not to perform in the workplace as trained. The thesis of this paper is that a new productivity improvement will not deliver actual and sustainable benefits unless workforce performance is achieved. The contribution of this paper are: 1) To suggest that “design for performance” be included as an additional dimension in the concurrent engineering and design of productivity improvement concepts; and, 2) That training programs designed to allow the workforce to attain performance be followed up by reactive and proactive management practices to sustain the required level of workforce performance.

Introduction

Businesses survive based on their continuous approaches to conducting business in better ways. The phrase of working smarter versus harder is often heard and is the genesis for the flow of ideas that form the basis for continuous improvement. Business activity results from the creation of goods and services. Activities that are involved in taking inputs and creating outputs defined as goods and services are referred to as operations. Coordinating the set activities that comprise the operations is referred to as operations management, and the objective of operations management is to deliver the goods and services in a way that maximizes the value of the outputs in relation to inputs. The ratio of the outputs to the inputs is referred to as productivity.

If the operations management function is successful, businesses remain profitable. Businesses compete against each other for market share via a number of strategies. These can include differentiation, cost, and customer service. A company choosing to compete

based on product differentiation will seek to provide a product or service that has unique features when compared to other products in its class. A company wishing to compete based on cost will seek to provide the best value when compared to the cost of other products in its class. A company wishing to compete based on customer service will seek to customize its products and services to satisfy a wide range of customer requirements and desires.¹

In reality, companies do not compete based on a single strategy. Everyone knows customers will not pay unlimited amounts for unique products or exceptional service. It is crucial that whatever competitive strategy is chosen, customers feel the value they receive is worth the cost. Thus, the cost of a product or service to the customer is determined by a variety of market conditions and not solely by the costs of providing that good or service by the producer. The lower the cost of providing the good or service, the greater the potential for corporate profit.

The Culture of Continuous Improvement

Whether in sports or industry, having a consistently good record is seldom good enough. Society expects improvement, and maintaining the status quo is not considered improving. Unless a team is improving its win/loss record, stock holdings are appreciating, or sales are increasing, chances are a coaching change is being discussed, an alternative stockbroker is being considered, or a management change is being contemplated. This relentless pressure to always do better than before is a simple fact of life in our society. This process goes on as a natural consequence of participating in a market driven economy. Businesses that lose sight of the fact that they are compelled to look at ways to improve business processes, and products as well as raise the level of company productivity have started down the road to closure. Competitors will simply “nudge” them aside. Competitive CEO’s cannot let a day pass, whether they are at work, on travel or on vacation without calling the office to inquire about the status of sales. If the answer indicates that today’s sales figures are better than those for the same period a year ago, then they will be happy. If not, then they and, by transference, a host of subordinates will not be happy.

The three basic organizational units of any enterprise are marketing, finance, and operations. Of these three, the operations unit typically has the most potential for generating productivity gains through instituting cost savings because the largest controllable cost components in many organizations are labor and equipment. The marketing unit is charged with increasing sales. Thus, virtually all strategies for achieving continuous organizational improvement rely on increasing sales and/or reducing costs. Thus, the market demands for better products and prices in turn challenges business to improve operations. This “improvement spiral” naturally occurs and essentially drags business operations along with it.

As the Operations Unit exercises its responsibility to reduce costs, or improve productivity it can pursue venues that are formal, such as through an Industrial Engineering or Operations Research Department, or it can utilize informal approaches

such as quality circles, “tiger” teams, or process action teams. Regardless of the venue, strategies to improve productivity include:

- Establishing/revising work methods and standards.
- Designing/redesigning the workplace.
- Designing/redesigning the product.
- Designing/redesigning and/or automating processes.
- Improving quality.
- Improving human factors.
- Outsourcing.

These strategies are not ad-hoc methods designed for use by amateurs but rather the tools of experts such as Manufacturing Engineers, Industrial Engineers, Operations Managers, Human Factors Psychologists and a host of other professionals. Over the years the contributions made by such experts have been responsible for creating the world’s major economic powers.

Regardless of what approaches these professions choose to enhance productivity, the choices must be implemented by employees. The issues associated with employees acquiring the knowledge required to effectively implement productivity enhancements are normally within the purview of the Human Resources unit of an enterprise. Human Resource Departments are charged with developing and delivering the appropriate training programs so that employees will know what to do and when under any newly implemented productivity enhancement.

A natural dilemma that can be present is the fact that the professionals who develop so many of the productivity enhancements often do not totally comprehend the issues associated with training the workforce in the new or altered approach. This shouldn’t be a surprise because as most industry is organized it may not be their job. Modern university curricula for industrial engineering, operations management, human factors psychology and other related disciplines seldom if ever deal with training issues. Similarly, training professionals spend little time studying issues associated with the development of technology based systems for improving productivity. As a result, the typical process of taking a productivity improvement system from development to implementation is linear. The designer will take a complete system to a trainer and assume that appropriate training will take place. The trainer will develop a training program and deliver it to employees and assume that it will be used as intended and, employees may then choose to use the training knowledge or not depending on whether they feel performance includes obstacles, disincentives, or other impediments. This linear system, in which each link assumes that the next link will do what is intended, far too often creates a disparity between the performance that is expected from the fully trained employee and that which is actually attained. This disparity can nullify any anticipated productivity gains, as well as result in health and welfare risks to customers and employees.

Human Performance

Productivity improvement concepts are always being introduced within the work environment. They represent change, and the introduction, management, and sustainment of the change associated with the productivity enhancement concept is always a major concern during the implementation process. Thus, the determination as to whether the workforce is trained, and able and willing to perform at a level sufficient to produce the output envisioned by the concept developers is critical. If this is going to occur, a set of performance standards or model expectations has to be developed.

It is not uncommon to find that the performance standards specified for many jobs refer to the requirement that the employee have obtained a certain level of schooling or have participated in a number of training programs. The assumption becomes one that suggests if and when employees have had the specified schooling and training, they will perform as expected. Having participated in a *process* such as a training or education experience does not guarantee that the employee can produce the *outcomes* required in the performance of a task.

The standards that comprise these outcomes should be quantitative as much as possible and serve as the yardstick from which actual performance is measured. In many of today's organizations those that develop productivity improvement concepts may be organizationally separated from the training department. Essentially, one section of the company may be building a product and expecting some level of human performance without ever involving the side of the business that is responsible for seeing to it that the performers can actually achieve those expected standards. The builders have their expectations and without the trainers being involved discussions about the trainability of the item may never occur.

Performance standards have the best chance of being achieved when the productivity concept is being simultaneously developed with the training program that will prepare the workforce to achieve the performance standards. This simultaneous development, known as "Concurrent Engineering (CE)," is a multidisciplinary team approach that has traditionally focused on the interaction among various life cycle concerns. The purpose of CE is to increase productivity and to create products that are high quality, reliable, less expensive than that of the competitor, and reflect the customers' requirements.² Traditional CE approaches have not focused on "trainability" or "performability" for the workforce to produce and implement the product or service under development. However, by including a Human Performance Technologist (HPT) subject matter expert on the multi-disciplinary CE team, the training and performance concerns will be voiced early in the development process where they have the best chance of influencing the development. Within the defense acquisition business, much of the new thinking has centered on bringing training and training support personnel into the discussions while systems are being designed. This is especially true when the training is embedded within the systems.

Attaining Human Performance

Historically, conventional wisdom has equated the completion of training with desired performance. However, we are now beginning to understand that although training is a *necessary* requirement for performance, it is not a *sufficient* requirement. In particular for more complex tasks, there is probably little hope that an individual without training can perform the task successfully. But we are now finding instances where employees who have been trained, deliberately choose not to perform as they were instructed.³ For example, a story is told of a gentleman who recently found himself in the hospital for a medical procedure. Upon hearing the door close he heard the head nurse say “OK gang, I know how we have been told to do this but I am in charge here and we are going to do this my way.” Fortunately, everything went well and he suffered no ill consequences. But the question remained: Why do employees who have been trained to a standard and know what to do and when, choose not to follow their training? There is a belief that people will struggle with changes, and even resist them if they were not afforded the opportunity to have some level of involvement in the pending adjustments. Some of the struggle comes out in a form of occupational defiance where performers of the tasks feel they can accomplish their work without necessarily having to adhere to the standards of the instruction.

In order for desired and planned productivity to occur, it is essential that employees know how and when to perform. When a discrepancy between expected and planned performance is due to a lack of knowledge, then the remedy is training. However, lack of knowledge may not be a yes or no proposition. For example, if the employee possessed the knowledge, but has not used it and is “rusty”, then the amount and level of training required is less than that required for an employee who is totally unfamiliar with the activity. In some cases, the training required may be only that required to insure that the employee has the opportunity to practice the skills periodically. Carefully choosing the training approach, and method can be a real cost saver for an organization. Only enough training is required to get a performer to standard. Then, management practices can insure they continue at standard or get better.

It is important for managers to be looking at work output and make on the spot corrections since sometimes performance can drop off simply because no one is checking against the standard. Checking on employee adherence to standards is especially critical if there is reason to believe employees are deliberately choosing to avoid working to performance standards. It is also important to carefully choose the methods by which performance knowledge is conveyed. These choices have significant monetary impacts.

Sustaining Human Performance

Knowing what to do and when to do it does not guarantee that employees will indeed perform to standard. If not training based, reasons for such behavior can usually be categorized as being due to organizational, environmental or motivational factors. Whatever the specific reason, the role of management is to create the desired performance through “reactive management” interventions that includes the inspection

and evaluation of human performance. When an instance of performance or productivity dip is detected, the appropriate intervention should be applied immediately to fix the issue. There are many organizational factors which can create reasons for trained employees to fail to perform. For example⁴, in one restaurant chain, it was observed that whenever a “company” person walked into an establishment, all employees, including managers, immediately started to perform as expected. The minute the “company” person left the establishment, employees deliberately changed their behavior to what they knew was not acceptable based on their training. The reason, in this case, was that employees knew if they executed all assigned duties in accordance with their training, the unit would not meet the company labor productivity standards and the manager would be reprimanded. This, in turn, would lead to the employees being punished. Consequently, the employees started to “cut corners” so that the labor cost requirements would be met. In short, the training goals were not aligned with the unit’s productivity goals. Being sensitive to the workplace dynamics is necessary. Employees may not complain to managers about workplace dynamics and simply choose to ignore certain critical tasks.

It is a well known human (and animal) trait that subjects will do those things that get rewarded and stop doing things that get punished. Employee punishment does not have to be administered solely by superiors. An energetic and ambitious young person joined a particular organization and was assigned a delivery route. The first day on the job, the person eagerly embarked on the tasks at hand and by 11:00AM was back at the office. When asked what he was doing back so early in the day, the reply was “I finished my deliveries.” This immediately elicited the attention of one of the veteran employees in the office who said “Your assignment was to make these deliveries in one day – be sure that from now on, you take one day to complete them.” This peer pressure pointed out that by doing more than expected, the new employee would give management the opportunity to expect more *from everybody*.

Punishing desired performance clearly can lead to performance discrepancies. Not rewarding performance can have an equally negative impact. Even if performance standards have been established, they can slip over time if management does not make a conscious effort to monitor adherence. This is especially true when people are working in collective work environments. If one employee delivers on expected performance but is surrounded by others who do not, and there is no consequence, it will not be long before the employee would think “why am I working this hard when nobody else is...aren’t they getting the same pay, promotions and rewards that I am.”

Problems with the physical workplace, or environmental factors, can also create performance discrepancies. This is often observed in multi-unit operations where the performance criteria have been developed based upon a standard design of the workplace and of the facility. As well intentioned as the commitment to a standard workplace and facility design may be, there will come a time when the business/political opportunities are such that a modification to the workplace and/or facility design will be required. When this modification is the cause for a performance discrepancy then a modification of the performance criteria is in order, unless a way can be found to apply a standard workplace or layout design,.

Situations where performance discrepancies do not exist and desired performance is being achieved still require diligent human resource management in order to insure that the desirable state continues. Proactive management practices in such situations will insure that employees receive positive feedback, are recognized, receive performance incentives, and are rewarded for their desirable behavior.

Many would suggest that the old adage “don’t fix it if it ain’t broke” be followed when no performance deficiencies are detected. However, maintaining desired performance and thus acceptable productivity requires that good management principles be in place. Good management practices may uncover that there are performance enhancements that have previously escaped management’s view such as told in the previous story of the new employee who performed his delivery route in far less time than the established standard. Instead of being praised, this individual was subjected to some level of attack by older employees who had not seen performance improvement as a positive thing, and thus they chastised the energetic employee. The deliberate desire on the part of some employees not to raise the performance bar sits in stark contrast to Thomas Gilbert’s⁵ work concerning exemplary performance. Gilbert defines the difference between typical performance and exemplary performance as the region for performance improvement. If employees are not managed in ways to raise their work to higher levels of productivity, Gilbert contends that a level of human incompetence can become accepted as the standard.

The results should be the provision of routine feedback to workers informing them how their performance compares to expectation and, when appropriate, providing recognition for superior performance, especially when that performance may demonstrate a level of performance previously considered unattainable. Such recognition can be but does not necessarily have to be monetary. One high performing company has peers collaborate with management to identify superior performers. Periodically, a small band of musicians begins a trek through the office area and employees are urged to join the parade. When the band stops at the cubicle of the designated honoree, a certificate and an item designated as a “badge of honor”, both signed by the area Vice President, are bestowed amid the applause of the onlookers. Sometimes, the honor includes a gift certificate. In all cases, the public recognition is appreciated by the honoree and serves as a motivator for the rest of the employees. Incentive plans where employees benefit directly from company advances in productivity have also proven to be successful tools for sustaining performance and productivity.

Conclusions

Companies that want to remain profitable and survive into the next decade and beyond must be aware of the necessity to not only attain and sustain a level of competitive performance, but even more importantly to build on that level through a continuous process of experimentation with higher levels of productivity. Such experimentation involves ways to achieve results cheaper, faster, or with enhanced quality.

Each productivity improvement choice triggers a series of internal corporate mechanisms that require attainment and sustainment of the new skill sets required for the company to inculcate the new or adjusted direction. Learning to do something new and different to accommodate change is difficult for many people and some will express their resentment by consciously refusing to do what they have been trained to do. Thus, training needs to be followed with reactive management intervention and the workplace needs to be home to a healthy amount of proactive management processes that will serve to sustain the desired performance while simultaneously preparing for the implementation of the next productivity enhancement concept. This constitutes a spiral of continuous improvement that relentlessly raises the expectations of productivity to a higher level while performers are instructed to deliver goods and services quicker, faster, and/or better.

For successful enterprises, this continuous improvement spiral successfully repeats itself many times during the life of a company and requires integration from the shop floor to the top floor and back.

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STEVE DUNCAN

Holds a Ph.D. in Education from the University of Arizona. He is currently Director of Military Programs and Professor of Education at East Carolina University. Prior to this assignment, he was Deputy Commander of the Army Training Support Center in Newport News, VA. His research spans Distance Learning and individual and group performance.

WILLIAM SWART

Holds a Ph.D. in Operations Research from Georgia Tech. He is currently Professor of Decision Sciences at East Carolina University. He has held numerous faculty and administrative appointments in Colleges of Engineering and Colleges of Business and served as Corporate Vice President of Operations Systems and Corporate Vice President for Management Information Systems for Burger King Corporation.