Reprinted from the National Productivity Review
Volume 18 – Number 1

Breakthrough To Success With Training & Teamwork

Mark K. Williams, CFPIM, CPSM, CSCP

Introduction

Much has been written about the importance of training and teamwork in the quest to achieve a world class manufacturing (WCM) company. Individually, training or teamwork can set the stage for powerful improvements in operational efficiencies. Together, they make an unbeatable combination. But, can these same principles apply to a distribution operation? Are they as applicable in a union shop as they are in a non-union environment?

This is a case study of the impact of training and teamwork in two different divisions within the same company. One division consisted of a non-union manufacturing plant. The second was a unionized distribution operation. In both operations, serious problems existed. These problems included poor customer service levels, inadequate inventory turns, and insufficient profitability. These are the kinds of problems that, left untreated, can cause the death of any manufacturing or distribution operation. However, by implementing training and teamwork at both operations, impressive improvements were achieved. Benefits included customer service levels exceeding 90 percent, dramatic improvements in the inventory turnover rate, and profitability that exceeded corporate goals.

There were differences, as well as similarities, in working with the manufacturing and distribution, and in the union and non-union environments. These will be discussed throughout the course of this paper.

A Manufacturing Turnaround

The first case study begins when the author became Operations Manager of a manufacturing department at the Auburn (Alabama) Division of Vermont American. This facility was a non-union, metalworking job shop. Training was geared to teach employees how to operate a single type of equipment. The predominant management philosophy at the time was that since training was very expensive and time consuming, training a person on more than one type of job was potentially wasteful. After all, if the employee left the company, the investment in training would only pay off for the next employer. Another important program in place was an individual incentive bonus based on performance against the standard for that operation. The incentive system rewarded workers solely for pieces produced, regardless of whether they were quality parts or if they were even needed at that time. This caused the employees to focus on the productivity of their operation, and to not be concerned with the impact of their actions on the operation as a whole. As a result, teamwork was notably non-existent.

About this time, Vermont American decided to embrace the principles of World Class Manufacturing. Among the key WCM principles the company emphasized were:

- Quality—Statistical Process Control (SPC), a methodology which uses statistical techniques to monitor and adjust production which was popularized by leading

Japanese manufacturers such as Toyota, was introduced to all divisions. Employees were trained in the tools and techniques of SPC. In addition, employees were given the authority to stop production whenever problems occurred which adversely affected quality.

- Training—The benefit of cross training, or training on more than one job, was recognized as a key WCM principal. This allowed employees to not only cover jobs that were down because of absences, but to help in operations that were behind schedule so that the whole group met its departmental goals.
- Total Productive Maintenance—This included not only preventive maintenance like the 3,000 mile oil change for your car, but also continuing efforts to adapt, modify and refine equipment to increase flexibility and reduce material handling.
- Employee Involvement—The concept of using the experience, creative energy, and intelligence of all employees by treating them with respect, keeping them informed, and including them and their ideas in decision-making processes appropriate to their areas of expertise. Employee involvement focused on quality and productivity improvements.
- Setup Time Reduction—The time required to change a specific machine or work center from making the last good piece of the current production run to the first good piece of the next scheduled production run needed to be lowered. During this setup time, no usable product was being made, so reducing setup time led to increased production and a healthier bottom line.

The company sponsored workshops for the management teams of their plants and recommended and paid for many books on the subject. They also supported managers who wanted to pursue career development by encouraging them to get training on company time and paying for expenses for qualified courses such as those in the APICS certification program (of which the author took advantage).

In addition, the Industrial Engineering department of Auburn University was doing a great deal of work in areas such as statistical process control, total quality management, and setup time reduction. The Vermont American Auburn Division had already formed a relationship with the Auburn University Industrial Engineering department in which students worked on projects at the plant. This not only helped the division improve its techniques, but the students also gained "real-world" experience. This alliance proved very fruitful as the division began to adopt WCM principles.

After the management team received several months of training, it was decided to begin the journey toward project teams by naming a Steering Committee. The Steering Committee consisted of the General Manager, Controller, Operations Manager, Plant Engineer, Training Manager and two other key managers. Management initially decided against including any members from the hourly work force until the management team had a better understanding of the implications of this new direction. Hourly workers were added after the first year. Using *The Team Handbook* as a guide, a team training program was established. The first trainees were the members of the Steering Committee. This would give them the tools needed to lead the team building effort. The following areas were emphasized:

- Team interaction skills
- Guidelines for productive meetings
- How to select the first project
- How to select the first project team
- Project identification techniques such as Brainstorming
- Data gathering and analysis techniques such as Fishbone Diagrams and Pareto Charts

After the team training was complete, the Steering Committee was ready to select the first project and project team. Some of the key lessons learned during the team training that influenced the selection process of the project and team were:

- Insure that the project had the support of top management. The Steering Committee consisted of top management, having them select the project would almost guarantee that the proper resources were allocated and obstacles removed.
- Maximize the chances of a successful first project. The training emphasized that the most important thing about the first project was for it to be successful. This would generate momentum upon which other projects could build. There will sometimes be projects or teams that do not work out, but if the first few projects have been successful, critics will be less likely to denigrate the total effort. On the other hand, if the first team project falters, many will write off project teams as a failed idea.
- Design a project with a short time span. The first project needed to be successfully completed in order to build momentum for future team projects, it needed to be completed as rapidly as possible in order to have a successful example to point to. Picking a project with a short turnaround time accomplished this goal.
- Utilize the Supervisor as Team Leader. One of the major problems encountered by many companies which begin emphasizing team building was that the first-line supervisor felt left out and powerless during the team-building process. As a result, the supervisor often acted—sometimes intentionally, sometimes unconsciously - as an anti-change agent, slowing down and disrupting progress. In order to prevent this and encourage the supervisor's cooperation, the supervisor was named the first team leader.
- Make team participation voluntary. Project teams tend to be small, normally between 6—12 individuals. With such a small team, the presence of just one individual that is antagonistic towards the team's goals or direction can disrupt the chemistry of the entire team and greatly lessen the chances for success. Therefore, keeping team participation entirely voluntary was crucial.

We scheduled time for the first project team to go through the same team training program the Steering Committee went through. This would ensure the team got off to a good start.

The First Project

The first project that was chosen was to reduce by 50 percent the setup time on one of the pieces of equipment. The supervisor as well as the setup people in this area had complained about how the lengthy setups made their jobs more difficult, so they were very enthusiastic about participating on the team. There was also a group of students from the Auburn University Industrial Engineering department who were looking for a setup time reduction project in which they could participate and they were brought in to work with the employees on the project team. The team was given a time limit of four months to complete the project. All team meetings and team activities were done on company time and in company facilities.

The students introduced several new techniques, including videotaping setups for later review and analysis. They also introduced some of the concepts behind SMED (single minute exchange of dies). Among these concepts were:

- Differentiating internal and external setup. This consisted of gathering all of the tools, gears, and raw materials needed for the setup before shutting the machine down to start the setup. The process of gathering all of the materials needed for the setup normally took between 15 minutes and an hour. Traditionally this had been done after shutting the machine off, wasting precious production time.
- Organizing the area. Many of the gears, cams and other interchangeable parts of the machines look very much alike, operators would often grab the wrong parts and spend time putting them on the machine, only to discover their mistake and have to redo part of the setup. Creating a designated area for all of the parts and labeling each part so that such mistakes were eliminated solved this problem.
- Keeping tools near each machine. Large amounts of time were wasted by operators searching for and borrowing from other operators the tools which were needed to make setups. A basic SMED principle is to provide each employee with all of the tools they would need for the setup.

The team videotaped a setup and reviewed it with a stopwatch. What they discovered astounded them. They found that the vast majority of the setup time was spent on non-value-added activities such as looking for tools and gears (which were often located at a considerable distance from their machines). In addition, because of the layout of the department, frequently operators had to interrupt their setup activities to make sure their other machines were still producing.

The Team Project Presentation

After developing solutions, the team prepared a presentation for the Steering Committee. Among their recommendations were that each setup operator receive a complete set of tools and that a pegboard be installed on which they could arrange their gears and fixtures in an orderly fashion. In addition, a recommendation was made to rearrange the layout of all of the machines in the department to allow an operator to see all of the machines while working on a setup to eliminate the need to stop the setup just to ensure the other machines were still running.

After the presentation, the team waited for the Steering Committee to make a decision. Privately, many of them felt their findings would be rejected because the findings cost money and they did not believe management would spend money based on the recommendation of hourly workers.

If the recommendations had been rejected, the team approach probably would have died a rapid death. However, all recommendations were approved without modification, including all expenditures. The announcement was made at a plant meeting, where the efforts of the team were praised in front of the entire work force. The solutions were then implemented in about 4 - 6 weeks, so everyone could see the benefits of the project.

Having witnessed a successful project which had actually made the lives of some of their fellow workers better, other employees were now anxious to participate in setup time reduction teams. Several teams were formed to reduce the setup times of other pieces of equipment. However, instead of making the Supervisor the team leader, as had been done the first time, a member of the first team was selected to lead the new teams. Even though this person did not necessarily know the operation of the equipment under review, he had been through a successful project and understood how the process worked. This allowed us to accomplish two other things:

- By working on the setup time reduction project, the person would begin to learn how these machines worked, setting the stage for cross training, which would soon follow.
- By working with their counterparts in other operations, they began building up trust and understanding, necessary prerequisites for teamwork.

There were several successful team projects. After allowing time for individuals from different operations to work together and better appreciate the manufacturing operation as a whole, it came time to break down the most formidable barrier in developing true teamwork in the operation—the individual incentive system. This incentive system rewarded workers solely for pieces produced. It did not matter that the company did not really need those parts at the time, or that the quality of the parts did not meet quality standards. Most people tended to follow the path that their compensation system leads them, and the individual incentive led them away from our objective of developing departmental teamwork.

We replaced the individual incentive with a department-wide incentive combining production and quality goals. Most importantly, because it was based on the work of the entire department, people now had incentives to help their fellow workers. Needless to say, this was a controversial move. In order to gain the support and cooperation of the workforce as rapidly as possible, the initial production and quality targets were intentionally set low enough so that it was easily attainable with a reasonable effort. Thus the entire department started earning the bonus payments each week which soon ended the controversy. The goal was adjusted quarterly, and within a year it was up to a level that would pay a bonus only if people worked together to achieve it. As the goal continued to rise, people had to work together to improve the process in order to keep earning it. And work together they did!

Management continued to promote team activities such as improvement projects,

providing advanced training in statistical process control, and instituting cross training throughout the operation. Working as a team, the operation posted the following results over a five-year period:

- Reduced scrap by 80%
- Tripled the inventory turnover rate
- Reduced throughput time from eight weeks to two weeks
- Reduced equipment setup times from 40% to 80%
- Reduced the labor content by 35%
- Exceeded corporate profitability goals

On To Distribution

After five years at the manufacturing plant, it was now time to see if these same tactics would work at a different type of operation, this time one of Vermont American's three distribution centers (DCs). The DC suffered from several major problems and although it had been open for only a year, it was losing money at a rapid rate. Its service level was an abysmal 55%, even though it stocked almost a year's worth of inventory! Since the distribution center had been added to an existing manufacturing facility that was unionized, distribution center workers were also in the union, a circumstance that did not exist in the Alabama manufacturing plant. Could the same mix of training and teamwork be as effective in this environment as it was in the manufacturing plant?

Upon reviewing the poor performance at the distribution center, it was clear that a lack of training was again at the root of many of the problems. The individuals responsible for managing the inventory had previously handled a few hundred SKUs for a single manufacturing plant. Suddenly, they were in charge of over five thousand SKUs from dozens of vendors. Needless to say, with no training provided, the likelihood of success was minuscule. The APICS Certification Review Program came to the rescue. The individuals responsible for managing the inventory went through several of the review courses, including Inventory Management where they learned the basics of managing distribution inventories. Armed with the knowledge needed to effectively manage inventory in this environment, they spearheaded major improvements in both inventory reduction and increased customer service level.

However, the major test of whether training and teamwork would be effective was the acquisition of the new automated carousel system. In a distribution center that lacks automation, workers generally go up and down aisles gathering the items needed to fill an order. A carousel system has a series of baskets containing the parts needed to fulfill the orders. Controlled by a computer, the carousel brings the parts to the worker instead of the worker walking through the aisles searching for them. Dry cleaners use a variation of the carousel system. In most dry cleaners, the person getting the clothes doesn't wander around looking for them. They hit a button and the motorized rack with the clothes turns until the desired clothes are in front. A carousel works the same way. This would cause a major change in the policies, procedures and structure of the operation. In a union environment, these are always very sensitive issues.

Management started with the step considered the most important of all—sitting down

with the union and discussing our plans openly and honestly. Many a misunderstanding has occurred because managers neglect this critical step. Management told the union that we were going to put together a team of individuals to select and implement the carousel system. The belief was also expressed that it was critical for the team to include both managers and hourly workers, who would feel the greatest impact of the carousel.

The union leadership discussed these issues with its membership and agreed to have some of its members take part in the team. However, they insisted that one key issue was understood by all involved: no deviations from the contract would be sanctioned. As long as the company operated within the contract, management would be free to proceed. But if management violated the contract, grievances would be filed as usual. Management accepted this and proceeded to appoint the team.

Was working with this team any different from working with the non-union team at the manufacturing facility? Sometimes yes and sometimes no, although the similarities far out-weighed the differences. The team members were still people, still wanted to do a good job and to make a decent living for their families. In demonstrating that Management would treat people fairly—the emphasis is on demonstrating it, not talking about it—a good team environment could be maintained in meetings and throughout the operation. Everyone involved took part in the discussions and decisions.

The differences from working with a unionized team? Ironically, the primary difference came from the positive feelings between the workers and management that the team environment created team dynamics encourages the breaking down of barriers. Of course, the biggest barrier was the union contract itself, with its restrictions on working conditions, overtime allocation and management rights. Sometime a manager would want to pitch in to show that they were part of the team and would go the extra mile to help get the job done. While this was appreciated in the non-union plant, it was a sure path to a grievance in the union operation. A few grievances were generated this way. However, management (being human too) had to overcome its natural tendency to get upset by the grievances and revert to doing business the old adversarial way. Constant reminders of the original agreement with the union to not violate the contract in any way, were necessary. This sometimes meant not helping someone who needed it. Was that easy to do within the team environment? No, it was extremely frustrating. However, the frustration had to be put aside in favor of forward progress.

The team was effective not only at selecting the carousel, but also bringing it in implementing its usage without our customers knowing that anything had changed. Since we offered same day service, interruptions were out of the question. The team's planning was so thorough, that there were no disruptions.

A Few Lessons Learned

Are training and teamwork as effective in a union environment as in a non-union one? Can they work in a distribution operation as well as in a manufacturing one?

Most definitely, yes! In the distribution operation the service level rose from 55 percent to 92 percent. Inventory turns more than doubled and sales increased by 50 percent with no increase in labor. Profits exceeded corporate targets by such a wide

margin that an expansion was approved!

Just remember, no matter what the environment, these rules still apply.

- If expertise is not available in-house, utilize books and get help from outside. APICS, local universities and consultants can all serve as excellent resources.
- Team-interaction skills are learned—conduct team training before you start.
- Include key managers and supervisors in initial stages. If it is a union plant, bring in the union at the beginning.
- In a union environment, make sure there is a clear understanding of the rules by all parties, and despite the temptation, stick to them
- Praise the team and its the results publicly.
- Use a few team members from successful teams on new teams. Remember, nothing breeds success like success.
- Do not force people to get involved--as success grows, more will get involved willingly.
- Move away from individual incentive systems that tend to discourage teamwork. If changing the systems, do it in such a way that the changes do not hurt everyone's bottom line, or morale and teamwork will suffer.

Finally, no matter what the environment, there is no substitute for that unbeatable combination: training and teamwork.

Resources:

Peter R. Scholtes and other contributors, "The Team Handbook - How to Use Teams to Improve Quality", Joiner Associates, Inc., Madison, Wis.

About the Author

Mark K. Williams, CFPIM, CPSM, CSCP, is President of the Williams Supply Chain Group, Inc., a consulting firm specializing in supply chain management and training.

Mark has over 20 years of industry experience in various roles including Director of Demand Planning, Senior Manager of Materials, Plant Manufacturing Manager, Distribution Center Manager, Corporate Internal Auditor and Production Control Manager.

He is an APICS Certified Fellow in Production and Inventory Management (CFPIM) and a Certified Supply Chain Professional (CSCP). He has also earned the Certified Professional in Supply Management from the Institute of Supply Management (ISM). He has many years of experience teaching APICS certification review courses and developing customized inventory and supply chain management courses for corporate clients. He has spoken at numerous APICS International Conferences in the United States, three European Supply Chain conferences, two Australian Logistics & Supply Chain Conferences, a South African Supply Chain Conference, as well as numerous local and regional supply chain meetings. In addition delivering seminars in 47 of the 50 United

States, Mark has delivered seminars for clients in South Korea, Singapore, Malaysia, Indonesia, Bulgaria, France and Australia.

Mark is online at www.w-scg.com and he can be contacted at mwilliams@w-scg.com

Seminars Developed & Conducted by Mark K Williams CFPIM, CPSM, CSCP

Seminars are One to Five Days in Duration Depending on Depth of Coverage

Bargaining With Vendors & Suppliers 1 Day	Materials Requirements Planning 1-3 Days
CPFR for Consumer Products Companies 2 Days	Physical Inventory & Cycle Counting 1 Day
Fundamentals of Demand Planning & Forecasting 1–3 Days	Project Management 2 Days
Fundamentals of Distribution Management 1–2 Days	Secrets of Managing Inventories & Cycle Counts 1 Day
Fundamentals Inventory Management 1–5 Days	Supply Chain Management 1–5 Days
Fundamentals of Purchasing 1– 3 Days	Strategic Planning 2 Days
Improving Inventory Accuracy 1– 2 Days	10 Keys to Inventory Reduction 1 Day
Lean Manufacturing 1–2 Days	Warehouse & Distribution Management 1–2 Days
Master Planning & MRP 2–3 Days	Value Stream Mapping 1 Day

APICS Courses

CSCP Certification Review Course	APICS Principles Series	CPIM Certification Review Courses

Past Seminar Locations

United States (47 of 50 States)	Jamaica
Australia	Malaysia
Bulgaria	Netherlands
France	Singapore
Indonesia	South Africa
Ireland	South Korea