



**Canadian  
Manufacturers &  
Exporters**

British Columbia Division



## Report on Phase One

*Presented by*  
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Team Time is a project of Teleflex Canada and Canadian Manufacturers & Exporters, BC Division.

Members of the Team Time Steering Committee were Werner Knittel, CME BC Division; Paul Hansen, Andrew McFadyen, Mark Soares, and Jay Warren of Teleflex Canada; and Tracy A. Defoe and Ruth Farrell, Workplace Education Consultants. The Steering Committee thanks everyone who supported and participated in the development of the model, the materials and the pilot training sessions.



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## Training in CI (Continuous Improvement) Manufacturing

A project of the Canadian Manufacturers & Exporters BC Division and Teleflex Canada  
Report by Workplace Education Consultants Tracy Defoe and Ruth Farrell

### Team Time Phase 1 Report

#### 1.0 Project summary

The goals of this project were to develop and share a model of inclusive workplace training for real participation through team processes in a Continuous Improvement (CI) or Lean Manufacturing environment. The training was developed and delivered through a pilot stage by people at Canadian Manufacturers & Exporters (CME) member Teleflex Canada Ltd. in British Columbia. Two Workplace Educators, Tracy Defoe and Ruth Farrell, worked with them on this innovative project.

Products of the project to date include this report, the Team Time Model and sample materials and training exercises in Lean (Continuous Improvement) Manufacturing ideas, tools and practices, a Team Time Meetings summary publication and accompanying training materials on Team Meetings as learning events for production leaders and other facilitators. This latter material was unanticipated at the planning of the project but emerged as an important piece in achieving project goals.

The time period for this project was extended from 1 year to 18 months in the fall of 2001 when attention at the pilot company was diverted to urgent business situations and Team Time development slowed from our planned activities. Other changes included a greater than expected turnover in developers and in the organization of production. In response the model format and sequence changed toward a 'pull' based on general questions rather than static content and prescribed sequence. Similarly we anticipated that production leaders would be trained as Team Time facilitators but this evolved into an individual rather than group situation. Financially, the project ended Phase One with in-kind contributions exceeding grant monies.

In terms of dissemination, Team Time general information has been distributed at business and education conferences. Detailed information including sample materials is being made available to member companies of the Canadian Manufacturers & Exporters High Performance Consortia, first in British Columbia and then across Canada.

## 2.0 Team Time Project objectives

The goals of Team Time were to develop and share a model of inclusive workplace training for real participation through team processes in a Continuous Improvement (CI) or Lean Manufacturing environment. In this section of the report, the objectives are discussed with special attention to the activities taken toward achieving the objectives, how we know if the objectives were met, what factors affect the success of the objectives and what impacts were noted. The two main objectives, developing the model and sharing it, were described through sub-objectives in our proposal. These are listed under the main objectives and included in the discussion related to each of the larger objectives rather than dealt with one by one.

### 2.1 Objectives related to the development of the model

We had a number of objectives in our proposal related the development of the model and the materials that make up the pilot modules.

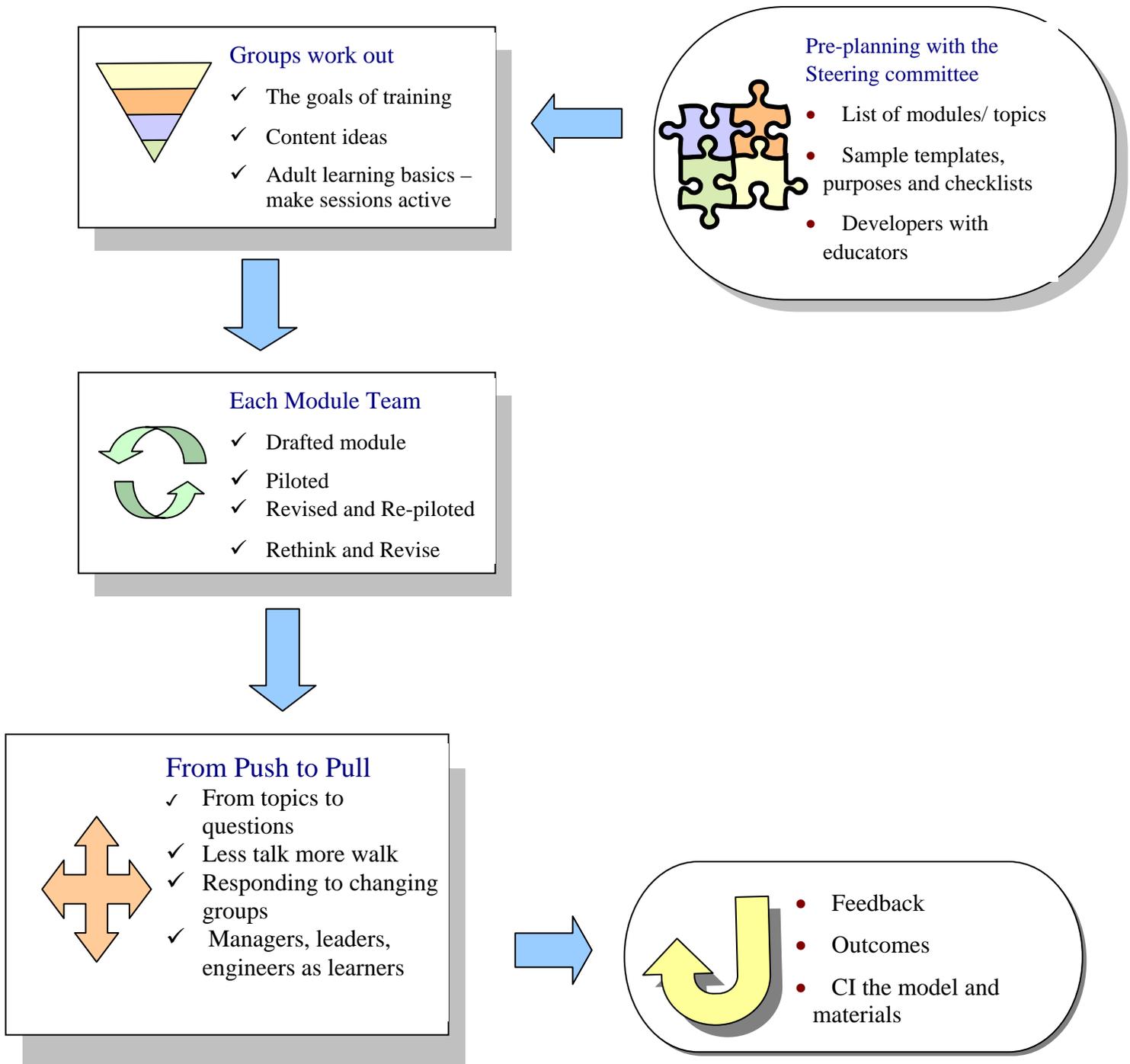
- ✓ To develop the model and pilot a draft of the modules
- ✓ To develop an applied team learning model for CI training
- ✓ To develop and improve a model of aligned content sequencing
- ✓ To arrive at topic modules in pilot training that work for factory workers
- ✓ To align development practices with delivery

We were successful in meeting all of these objectives. In business terms, this project was a form of Research and Development; we did not expect to get it right on the first try, and we plan to continue to develop and improve the model and the modules. We went through several rethinks and redesigns as we saw how the Lean Manufacturing content and the team learning model worked together in the pilot company. As of the end of Phase One, the material and the model exist and have been successfully drafted, piloted and revised.

The diagram on the next page, from the Model, portrays how we developed and improved the model and materials in the style that we show the flow of the training sessions. In brief, we started with a draft idea of content topics that are common to Lean Manufacturing but usually inaccessible to production workers. Each module was assigned an initial group of developers chosen because they had some knowledge of the topic, and a volunteer production leader joined each module development team within the first few weeks. The education consultants, experienced in curriculum design and in integrating essential skills learning with content learning, were part of each module development team. The development group determined the learning objectives, Lean content and learning activities for each pilot module. The number of meeting and hours dedicated to the draft modules is one measure of the success of involving people in aligning development practices with delivery.

## Team Time: a learning materials model

How did we develop the Team Time materials that we piloted?



As modules were piloted more people were drawn into the development and revision process. Senior managers, production managers, leaders, shipping receiving, materials handlers, shop floor workers and quality assurance staff participated. The project benefited from the involvement of manufacturing engineers who took active part in pilot sessions, leader development sessions and meetings.

We went through three regroupings of the content, and several versions of the module template. As we piloted the modules with different groups, we began to think of the modules as a set or menu of possible activities around thematic questions, rather than as a prescribed and predictable sequence of activities. We appropriated the Lean concept of “pull” to describe in a manufacturing framework the notion of learning need, and we revised the model and the modules to respond to the pull of changes and needs rather than the push of prescribed content and sequence. As we went along, some of the modules changed or refocused in response to changes at the workplace. Developers ‘pulled’ on Team Time to train work groups; workers pulled via questions and requests. This helped us get close to real needs and grounded many of the abstracted concepts of Lean Manufacturing in real life. That approach is central to the model which balances pushed content and pulled needs and can be written as a sequence or a set of possibilities.

We developed several feedback formats (included in the sample materials) for the pilot sessions. We also debriefed individuals after the pilots, collected quotes and observed people, groups and other aspects of the workplace to try to gauge the response to Team Time and the impacts the training was having at the company. Feedback from participants consistently rated the pilot training highly. The group learning aspect of the training was described as very valuable and supported efforts to really get teamwork going at the company. Consistent with our objectives for participation, developing Team Time brought new understanding of Lean Manufacturing ideas to workers who were just beginning to hear of them and who are just starting to work in production team groupings. At the same time, those who knew a lot or a bit about Lean Manufacturing deepened their understandings through trying to decide how and what to teach, and most importantly learned about adult learning and encouraging participation. They also learned about communication with workers and with each other through print, pictures, speaking and listening, and through physical activities.

Other activities that we have identified as particularly useful in advancing the Model include:

- Worker-led cell tours helped educators determine how to explain concepts in the modules that are key to understanding the way work is organized. These tours also gave us a clearer view of worker perspectives and readiness for CI learning
- Working with managers and internal Lean experts to understand that Team Time was about building participation and understanding and not about transferring all the content in their heads to other people. We accomplished this during development meetings through carefully identifying learning objectives for Team Time.

- Production Leader sessions helped form important questions and took us from module titles to questions, helping clarify the understanding gap between managers and the shop floor.
- Treating the pilots as training Research and Development where all participants' input was important. We also piloted production leaders and Manufacturing Engineers helping run and adapt sessions during the pilots with different groups.
- Expanding on the original format of T-05, What is the learning basis of Team Time? Manufacturing Engineers and Managers learned how to be more inclusive when leading meetings and training sessions.
- Tours, development meetings, pilots and even getting ready to go to the Chicago Workplace Learning conference help us to adjust our content and scheduling for many of the modules.

## 2.2 Objectives for leaders

We had specific goals related to production leaders and their involvement in the development and piloting of Team Time. These were:

- ✓ To have production group leaders be co-trainers
- ✓ To support leader involvement in defining and shaping their Train the Trainers experience.

We achieved these objectives, but not in the straightforward way we planned at the time of our proposal. We held a number of meetings with leaders as Team Time began in order to understand their points of view about Lean Manufacturing, about training, their roles, and how people learn. In consulting them, we learned that they did not all want to be trainers, and that many of them were already struggling to juggle the roles and responsibilities they had. All were interested in becoming better facilitators because running team meetings was new to them. Supporting this request became a Team Time focus for production leaders, rather than a universal train-the-trainer approach. In regards to the two original sub-objectives for leaders then, we were completely successful in achieving a revised version of the second objective in that we supported leaders in defining and shaping their Team Time involvement. A few leaders did become trainers, but they did so through participating with the education consultants and taking over some parts of sessions, rather than through a defined train the trainer process. All of the sessions were first piloted for the leaders. This meant that when a production cell group went through the module, it was a repeat for the leader and often he would take charge of some aspects of the session. With time and confidence, some leaders did this more than others. This stepping up to be a trainer took time; by the end of Phase One about one third of the leaders had taken charge of some Team Time training.

We found a different group of 'leaders' who became co-trainers in some cases. Each one of the development teams participated in the pilot sessions of their modules.

Manufacturing Engineers (known as M.E.'s) acted as co-trainers in a few modules, office workers in another. Managers participated as resource people in some pilots. This kind of leadership was not anticipated in our planning but it helped spread participation out past the production floor and make the Lean training for everyone, not just for production workers.

Some factors that affected the involvement of production leaders in participating as developers of Team Time and in being trainers include:

- Early efforts to get leaders involved were a surprise for some managers and there was some initial hesitation. Collaboration of this kind was not familiar. Some managers thought they should know, and should set out the content of a module before asking production leaders to participate. We wanted to draw everyone in early, before ideas solidified. Other managers were more comfortable inviting production leaders to brainstorm about Lean topics. We orchestrated the matching of leader volunteers with module topics and included them on the teams and this was important to the eventual success of the development.
- We learned that the designated internal experts were sometimes not available, or were silent. Over the course of the project a number left the company or changed departments and responsibilities. We needed to find back ups, help people to speak up, and help people to get together. Our persistence in this was important.
- In keeping with our “pull” learning stance, we invented the “Meeting Ban” a meeting notice invitation card modelled on the production “kanban” Team Time is about participation and getting people involved means getting over the barrier of leaving other work for short times. At one point production leaders jobs’ were changed so they did not have production duties, but it was still a challenge to get them all to training, and to meetings. The Meeting Ban gave permission to leave the shop floor.

### 2.3 Dissemination objectives

Our goals for dissemination were

- ✓ To disseminate the model through the report and presentations
- ✓ To find a way of explaining the model that is clear and easy to share.

The end of Phase One marks a new beginning of dissemination since we now have a report and more importantly concrete materials and a model to share. Still, we feel we are already successful in achieving the first of these objectives. Some of our dissemination activities are listed below.

- Within BC, manufacturers who are members of the Canadian Manufacturers & Exporters BC Division High Performance Consortia learned about Team Time through presentations to the Training Special Interest Group and at meetings of the Scorecard Special Interest Group. Also, BC Vice President Werner Knittel is an ambassador for Team Time among manufacturers.

- We made a well-received presentation “Learning Continuous Improvement: the Teleflex CME Model” at the Workplace Learning Conference in Chicago Illinois, USA December 2001. Lisa Choy from Teleflex Employee Services helped host the presentation and wrote up her experiences for the company monthly news, The Flex Times, December issue.
- Ruth Farrell and Tracy Defoe each made presentations at the Conference Board of Canada’s “Partners 2002: Linking Education and Innovation Symposium and Showcase” in Calgary, Alberta May 2002. The presentation, *Literacies? There is more to workplace literacy than reading, writing and communication* summarized current research thinking about literacies and their relationship to participation and how systems in a workplace can support work and workers to put literacies to use with examples from Team Time. The presentation *Push or Pull? Modelling and encouraging participation in workplace training* summarized Team Time’s collaborative and hands-on approach to researching and developing training based on participant experience.
- We have informally disseminated information about the project at other literacy community activities such as the Portraits of Literacy conference at UBC in Vancouver in July 2002 and at the Researching Literacy in Practice Pre-conference event. We have also informally disseminated information via our networks of colleagues.
- We have continued communication with companies and educators interested in seeing the model, reading the report and having workplace educators visit their site to share ideas and approaches.

Some of the factors affecting this impact of this goal include the timeline; it is easier to disseminate a finished product than a project in process. In terms of conferences and meetings, we were not successful in including production leaders in off-site dissemination and presentations. We know their voices would help managers and trainers from other companies understand the impact of Team Time and of good learning practices. This “miss” of shop floor production workers and leaders is also reflected in who typically attends these conferences. Like most presenters, we spoke to a lot of educators and Human Resource managers at conferences.

In regards to the second dissemination objective, finding a way to share the model that is easy to understand, we have been working hard on finding ways to format Team Time so that people at Teleflex can find it, use it, try it out with their work groups independently. At the time of writing this report, this goal is one that we are very actively working on, and on that will carry into Phase Two.

Some of the activities and their impacts we can discuss at this point include:

- We worked with Teleflex Canada design engineers on a visual layout for model and on the flow diagram to represent each module.
- Our search for a format for materials that puts information into people’s hands lead us to the Infoflip format from Nanaimo BC. We have completed a version of Meetings

training reminder in that pocket flip format - a physical format for linking ideas similar to hypertext links found on the Internet.

- We have been developing graphics bank on the company Intranet to for key words and concepts to support employees who do training or create documents and want to help make the meaning clear and easy to understand. We are using these graphics to support learners in all Team Time modules. This is an easy to replicate communication practice.

The complexity of good learning practice in a high tech manufacturing environment made production of a clear and easy to share model challenging. We were ambitious in our original goals and meeting them has been a challenge, even though we extended the timeline. We also found it challenging to try to find images that speak to wide range of workers, leaders, trainers and managers. As Team Time moves to other industries, this will become a local customization task, to find the graphics that convey the intended message to the workforce.

### 3.0 Changes during the project and the reasons for them

We did make some changes in our original proposed plans, and we detail them here in the spirit of sharing so that others will learn from our experiences.

- The original plan included an objective to develop and improve a model of aligned content sequencing. This shifted from a fixed and chronological set of modules that teams would move through to a menu of modules that team leaders could pull as needed for the group. This change came about because group members such as workers, leaders, Manufacturing Engineers and managers often changed and the original Team Time “Lean Journey” was based on a stable group working through all the same modules together. That kind of stability and predictability did not exist in the company. Instead of the model and the modules containing fixed content and activities, the Team Time modules evolved into a set of possible activities and content pieces that leaders could choose as appropriate to their groups’ needs.
- Another important change in the model was centering on process changes and work demands, real life needs for a production group, began to show as the most persuasive reason for Team Time group learning. Scheduling work groups to go through a series of modules in sequence and in a set period of time just didn’t work. Without the urgent need to change, production priorities got in the way of training. As changes occurred, sharing understandings and information became important so that workers could learn efficiently and get back to regular or improved production. These change moments became the pull catalyst for scheduling training. We responded to this by making it part of the model.
- The original objective to arrive at topic modules through piloting that worked for factory workers also shifted in our anticipated procedure – from naming content and concepts in fixed terms to asking questions that remain open for current and often changing answers and definitions. The original intent of this objective was

unchanged: we sought to arrive at modules that work, in learning terms, for workers. Again, the shift is a result of our experiencing constant change. When people, product and processes in the workplace context kept shifting, we found that the content could not remain static. The module titles, objectives and activities all reflect a question-posing approach that leads learners and facilitators to find current key people and have meaningful discussions, simulations and observations of how concepts are held in current practice. This shift will also make Team Time easier to transfer to other manufacturers.

- The original objective to have production group leaders be co-trainers was expanded to include leaders of other sorts. Other individuals and groups, especially those who moved between the shop floor and the staff offices were recognized as natural trainers and teachers in the workplace. We scheduled sessions to support the Lean Manufacturing learning and teaching skills of staff in the Quality Assurance, Manufacturing Engineering and Human Resources. We also worked to develop the training repertoire of the operations managers.
- We extended the period of time for Phase One from 12 months to 18 months.

#### 4.0 Impacts of Team Time

One of the advantages of extending the time period for TeamTime Phase One is that we were able to document more results at the pilot company and in the CME than if we had completed after one year. At the same time as presenting these impacts below, we are aware that we could do more to express our goals and impacts in ‘scorecard’ format associated with Lean thinking; we will do so in Team Time Phase Two. Team Time has had individual, work group and company wide impacts at Teleflex Canada, the pilot company.

Here are a few quotes to represent different points of view on impacts of the project.

*I'm pushing for Team Time training. ...I want to have my job 5 years from now. I want to get better. I want to have more knowledge. I want the company to make money. Those are benefits for both the company and me”.*

Machine Operator taking part in Team Time

*“What I see with Team Time is people really taking part in training, and pulling what they need to understand what is next for their cell. And some of those people are surprising me.*

Bolts Committee member

*“Once we have enough people who understand these (Lean) concepts, it becomes a pull system where the people are requesting changes instead of outside departments trying to push these changes on them.”*

Manufacturing Engineer

*“Before I asked Ruth and Tracy for help with the cell, I was afraid to even start trying to change things. I expected a lot of resistance and communication problems. But the Team Time training made a huge difference to me, and to getting the job done.”*

Manufacturing Engineer

*“What we’re trying to do is shift the culture. Team Time isn’t just a training program. It is part of us shifting our culture in the organization and a way of involving employees in ways that we’ve talked about before from a theoretical perspective. This is a way of actually putting it into action.”*

Senior Manager

*“Team Time has played a very significant role in developing a community within the workforce. It’s also changed the way I approach issues from “Do this!” to group participation and cooperative learning.”*

Operations Manager

*“I know there are a number of companies all facing similar problems, ripe to take this learning and put it into action.*

VP CME

Some of the impacts of Team Time are easy to see. The project and the educators have had a plain language influence on the company newsletter and on the ways data is presented. Company metrics are titled with the question that the data answers such as “How many of our products did we deliver to customers on the date we promised?” This innovation and others have made the metrics a more effective communication tool.

Managers, Engineers and Production Leaders are going through changes with Team Time. Many of them are learning new ways to communicate and to ‘help change happen.’ All have expanded their understandings of learning and their repertoire of things to do to support others. Team Time has helped humanize production meetings: inviting new people, encouraging transitioning through warmups, using visuals to help understanding, using plain language. Team Time has worked to find and recognize individuals in all areas of the pilot workplace who support CI learning and communication.

The Steering Committee for Team Time met approximately quarterly through the project and discussed the business impacts of the project and also the potential interest in Team Time for other CME High Performance Consortia companies. During the time of the project a great many business improvements were achieved at Teleflex Canada. New products were introduced; old production cells were redesigned and reorganized and the role of production leaders were revisited several times. The company made considerable changes toward becoming a Lean Manufacturer. At the end of Phase One in September 2002, in preparation for a presentation at the Canadian Manufacturers & Exporters Annual Meeting in Vancouver, a Teleflex Canada Senior Manager tallied gains made.

The list was impressive. Employee Team Time training shares the company-wide success including:

- 90% on-time delivery of finished products up from 65%

- Cell lead time 2-3 days, down from 2 weeks
- 7+ inventory turns, up from 4
- Fewer parts shortages, way down from daily

These results are company-wide and not just in pilot cells. Many of the improvements were achieved by staff members rather than through exclusively production teams, but it is an impressive record, and one that we believe will interest other manufacturers.

## 5.0 Highlights and achievements

- Team Time is about educating for participation in change at work, one highlight of the project was the level of participation in the development and piloting. Over one third of the people at Teleflex had a role in developing Team Time, many more than anticipated in our plan.
- Another achievement is the inclusiveness of this Lean Manufacturing training. No one was left behind; every member of the pilot work cells participated and learned. There are three parts to Lean Manufacturing change – people, processes and technology. Most training focuses on processes and technology. Team time tackles the people part through team processes and group learning but most importantly through embedding literacy and skill support in the grounded content and concept learning.
- The production cells that piloted Team Time modules ranged from relatively new cells, set up to be as Lean as possible, to the traditional machine shop and the assembly cells that were at the first stage of change toward Lean Manufacturing practices. A real achievement for Team Time was bringing these long-term production worker groups into meaningful understanding of the reasons and goals of the changes toward Lean Manufacturing. Managers and Manufacturing Engineers confessed that they were reluctant to even try to include these groups and had avoided doing so before Team Time provided a framework for inclusive change.
- Team Time and Teleflex Canada’s BOLTS (Building Our Learning and Teaching Skills) initiative have helped this company develop a sophisticated understanding of learning and training.
  - Through Team Time development we have reframed peer teaching from just job training to conceptual and learning skills support. We also achieved worker and production lead cell tours for other workers as one kind of peer teaching. This was a unaddressed goal of the company for some time before Team Time and BOLTS started.
  - Team Time opened learning expectations through raising people’s readiness to take risks, and to share and compare perspectives. We saw increased confidence to pull or ask for learning as individuals or work groups. We also saw increased confidence and capacity to develop and

deliver training internally in the company, and to lead meetings and share expertise.

- A great many people see themselves as teachers not only in regards to Lean Manufacturing but in supporting areas such as reading data, reading charts, reading engineering drawings, and understanding math and measurement.

## 6.0 Recommendations

What recommendations would we make to other organizations planning a similar project? We have made a list outlining some of our lessons learned to date.

- Double the time you think it will take.
- Before you make a plan or start anything, do some research. Talk to as many kinds of people about how they cope with changes in people and processes and customer demand. Use this understanding to plan realistically.
- Expect changes in personnel. Name key people for now, and likely backup people for when situations change.
- Find content people in all levels of the company – don't depend on managers, supervisors, engineers, and leaders only. Make sure experienced and knowledgeable workers are included.
- Recognize early the seasons of productivity at work and how production pressures will preclude training – schedule around these periods.
- See the whole project as a learning situation for everyone: the Steering Committee, the union, the managers, support workers, engineers and production workers and the educators. Plan meetings and reports to be learning documents. Have a learning strategy and don't expect people to all know the same things about the project.
- Embrace complexity. These are complicated circumstances and simple one-dimensional solutions are unlikely to fit. Our results come from considering many aspects of each element and trying to work with complexity.
- Allow considerable time for reporting and producing materials.

## 7.0 Materials of interest (not available on NALD)

- ✓ The Team Time Model and sample materials
- ✓ Team Time Meetings — How to build participation learning and communication
- ✓ Information distributed at conferences during the project
- ✓ Newsletter articles about Team Time and its development at Teleflex Canada