Lean Process And Six Sigma

Sample

Corporate Training Materials

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Preface

What is Courseware?

Welcome to Corporate Training Materials, a completely new training experience!

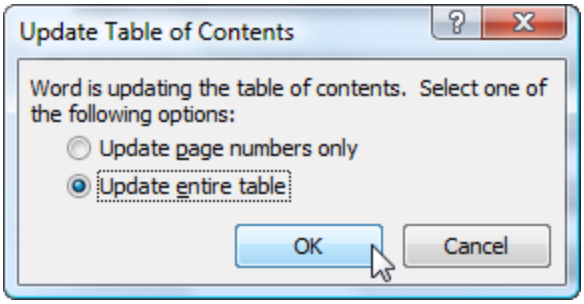
Our courseware packages offer you top-quality training materials that are customizable, user-friendly, educational, and fun. We provide your materials, materials for the student, PowerPoint slides, and a take-home reference sheet for the student. You simply need to prepare and train!

Best of all, our courseware packages are created in Microsoft Office and can be opened using any version of Word and PowerPoint. (Most other word processing and presentation programs support these formats, too.) This means that you can customize the content, add your logo, change the color scheme, and easily print and e-mail training materials.

How Do I Customize My Course?

Customizing your course is easy. To edit text, just click and type as you would with any document. This is particularly convenient if you want to add customized statistics for your region, special examples for your participants' industry, or additional information. You can, of course, also use all of your word processor's other features, including text formatting and editing tools (such as cutting and pasting).

To remove modules, simply select the text and press Delete on your keyboard. Then, navigate to the Table of Contents, right-click, and click Update Field. You may see a dialog box; if so, click "Update entire table" and press OK.

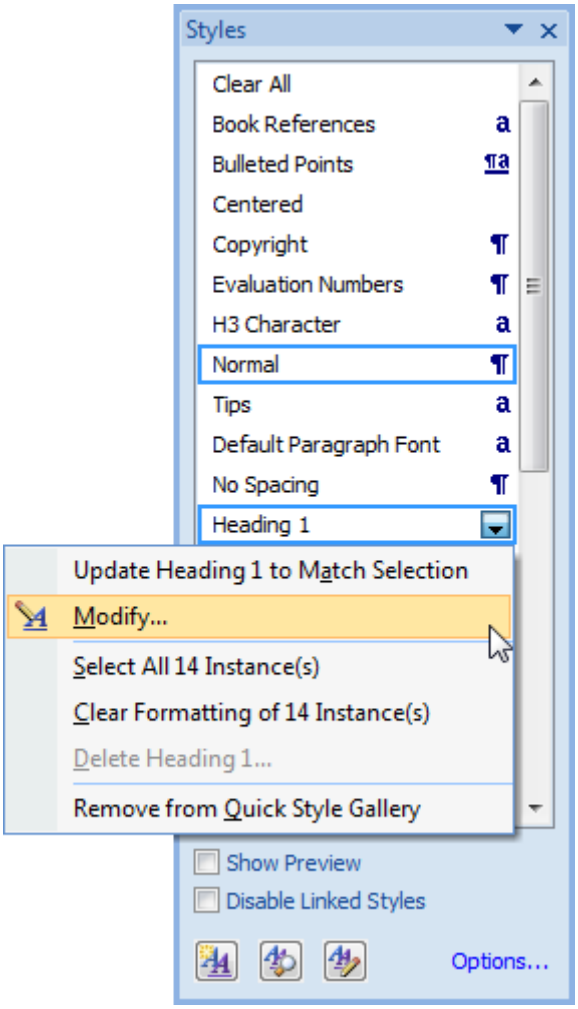


(You will also want to perform this step if you add modules or move them around.)

If you want to change the way text looks, you can format any piece of text any way you want. However, to make it easy, we have used styles so that you can update all the text at once.

If you are using Word 97 to 2003, start by clicking the Format menu followed by Styles and Formatting. In Word 2007 and 2010 under the Home tab, right-click on your chosen style and click Modify. That will then produce the Modify Style options window where you can set your preferred style options.

For example, if we wanted to change our Heading 1 style, used for Module Titles, this is what we would do:



Now, we can change our formatting and it will apply to all the headings in the document.

For more information on making Word work for you, please refer to Word 2007 or 2010 Essentials by Corporate Training Materials.

Materials Required

All of our courses use flip chart paper and markers extensively. (If you prefer, you can use a whiteboard or chalkboard instead.)

We recommend that each participant have a copy of the Training Manual, and that you review each module before training to ensure you have any special materials required. Worksheets and handouts are included within a separate activities folder and can be reproduced and used where indicated. If you would like to save paper, these worksheets are easily transferrable to a flip chart paper format, instead of having individual worksheets.

We recommend these additional materials for all workshops:

- Laptop with projector, for PowerPoint slides
- Quick Reference Sheets for students to take home
- Timer or watch (separate from your laptop)
- Masking tape
- Blank paper

Maximizing Your Training Power

We have just one more thing for you before you get started. Our company is built for trainers, by trainers, so we thought we would share some of our tips with you, to help you create an engaging, unforgettable experience for your participants.

- **Make it customized.** By tailoring each course to your participants, you will find that your results will increase a thousand-fold.
    - Use examples, case studies, and stories that are relevant to the group.
    - Identify whether your participants are strangers or whether they work together. Tailor your approach appropriately.
    - Different people learn in different ways, so use different types of activities to balance it all out. (For example, some people learn by reading, while others learn by talking about it, while still others need a hands-on approach. For more information, we suggest Experiential Learning by David Kolb.)
- **Make it fun and interactive.** Most people do not enjoy sitting and listening to someone else talk for hours at a time. Make use of the tips in this book and your own experience to keep your participants engaged. Mix up the activities to include individual work, small group work, large group discussions, and mini-lectures.
- **Make it relevant.** Participants are much more receptive to learning if they understand why they are learning it and how they can apply it in their daily lives. Most importantly, they want to know how it will benefit them and make their lives easier. Take every opportunity to tie what you are teaching back to real life.
- **Keep an open mind.** Many trainers find that they learn something each time they teach a workshop. If you go into a training session with that attitude, you will find that there can be an amazing two-way flow of information between the trainer and trainees. Enjoy it, learn from it, and make the most of it in your workshops.

And now, time for the training!

Icebreakers

Each course is provided with a wide range of interactive Icebreakers. The trainer can utilize an Icebreaker to help facilitate the beginning of the course, as it helps “break the ice” with the participants. If the participants are new to each other, an icebreaker is a great way to introduce everyone to each other. If the participants all know each other it can still help loosen up the room and begin the training session on positive note. Below you will see one of the icebreakers that can be utilized from the Icebreakers folder.

Icebreaker: Friends Indeed

Purpose

Have the participants moving around and help to make introductions to each other.

Materials Required

- Name card for each person
- Markers

Preparation

Have participants fill out their name card. Then, ask participants to stand in a circle, shoulder to shoulder. They should place their name card at their feet. Then they can take a step back. You as the facilitator should take the place in the center of the circle.

Activity

Explain that there is one less place than people in the group, as you are in the middle and will be participating. You will call out a statement that applies to you, and anyone to whom that statement applies must find another place in the circle.

Examples:

- Friends who have cats at home
- Friends who are wearing blue
- Friends who don't like ice cream

The odd person out must stand in the center and make a statement.

The rules:

- You cannot move immediately to your left or right, or back to your place.
- Let's be adults: no kicking, punching, body-checking, etc.

Play a few rounds until everyone has had a chance to move around.

Training Manual Sample

On the following pages is a sample module from our Training Manual. Each of our courses contains twelve modules with three to five lessons per module. It is in the same format and contains the same material as the Instructor Guide, which is then shown after the Training Manual sample, but does not contain the Lesson Plans box which assists the trainer during facilitation.

The Training Manual can be easily updated, edited, or customized to add your business name and company logo or that of your clients. It provides each participant with a copy of the material where they can follow along with the instructor.

Six Sigma is the most important training thing we have ever had. It's better than going to Harvard Business School.

Jack Welch

Sample Module: Understanding Lean

Lean and Six Sigma are buzz-words we hear in business all of the time. Before we get started, let's make sure we all understand just what we mean by "lean" and "Six Sigma".

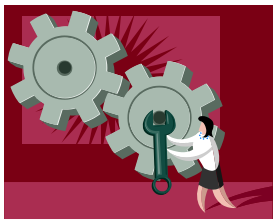
About Six Sigma

- Six Sigma is a structured, data-driven process of solving critical issues from a business perspective that we haven't been able to solve with current methodology.
- Six Sigma is the single most effective problem-solving methodology for improving business and organizational performance.
- The common measurement scale is called the Sigma capability or Z and is a universal scale. It is a scale like a yardstick measuring inches or a thermometer measuring temperature.
- The scale allows us to compare business processes in terms of the capability to stay within the quality limits established for that process.
- The Sigma scale measures Defects per Million Opportunities (DPMO). Six Sigma equates to 3.4 defects per million opportunities.

What Six Sigma <u>is</u> and is <u>not:</u>

- Six Sigma is not an add-on to normal business activities.
- It is an integrated part of the improvement process.
- Six Sigma is management methodology driven by data.
- Six Sigma focuses on projects that will produce measurable business results.
- Six Sigma is not a standard, a certification or a metric like percentage.
- The central idea behind Six Sigma is that if you can measure how many" defects" you have in a process, you can systematically determine how to eliminate those and approach "zero defects".
- Sigma is a value from 1 to 6 that signifies the maximum number of defects per million:
    - 1 Sigma = 690,000 defects/million = 31% accurate
    - 2 Sigma = 308,537 defects/million = 69.1463% accurate
    - 3 Sigma = 66,807 defects/million = 93.3193% accurate
    - 4 Sigma = 6,210 defects/million = 99.3790% accurate
    - 5 Sigma = 233 defects/million = 99.9767% accurate
    - 6 Sigma = 3.4 defects/million = 99.999997% accurate
- Six Sigma is about reducing variation.
- Six Sigma find out the facts before acting.

About Lean



"Lean" means continuously improving towards the ideal and achieving the shortest possible cycle time through the tireless reduction of waste.

- It is focused on eliminating waste in all processes
- It is about expanding capacity by reducing costs and shortening cycle times
- It is about understanding what is important to the customer
- It is not about eliminating people

Examples of Lean Projects:

- Reduced inventory
- Reduced floor space
- Quicker response times and shorter lead times
- Decreased defects, rework, scrap
- Increased overall productivity

History behind Lean

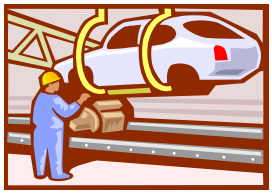
The phrase “lean manufacturing” was coined in the 1980's and has its roots in the Toyota Production System. (See later in this module)

Most of the basic goals of lean manufacturing are common sense, and some fundamental thoughts have been traced back to the writings of Benjamin Franklin.

Henry Ford cited Franklin as a major influence on his lean business practices, which included Just-in-time manufacturing. The founders of Toyota designed a process with inspiration from Henry Ford and their visits to the United States to observe the assembly line and mass production that had made Ford rich. The process is called the Toyota Production System, and is the fundamental principle of lean manufacturing.

Two books have since shaped the ideologies of Lean: “*The machine that changed the world*” (1990) and *“Lean Thinking”* (1996).

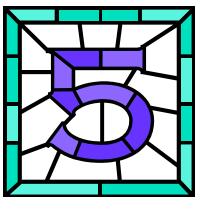
Toyota Production Systems



The Toyota Production System (TPS) is a mindset and management system that embraces continuous improvement. TPS organizes manufacturing and logistics, including interaction with suppliers and customers. Originally called "Just in Time Production," it builds on the approach created by the founders of Toyota. TPS revolves around 5 simple steps:

1. Define Value of your product > Make it according to Customer needs and Customer Defined
2. Identify Value Stream of your product > Follow the product and identify unnecessary actions
3. Study the Flow your product > Eliminate All Waste
4. Make only what the customer orders > Produce Just In Time for Demand
5. Strive for Perfection > Continuous Improvement. Good enough is never enough.

The Toyota Precepts



The five methods defined by Toyota contain some basic principles:

1. **CHALLENGE:** Form a long-term vision, meeting challenge with courage and creativity to realize your dreams.
    - Create Value through Manufacturing and Delivery of Products and Services
    - Nurture a spirit of Challenge
    - Always have a Long Range Perspective
    - Thorough Consideration in Decision Making
2. **KAIZEN:** Improve your business operations continuously, always driving for innovation and evolution.
    - Have a Kaizen Mind and Innovative Thinking (See later this module)
    - Build Lean Systems and Structure
    - Promote Organizational Thinking
3. **GENCHI GENBUTSU (Go and see):** Go to the source to find the facts to make correct decisions, build consensus, and achieve goals at our best speed.
    - Genchi Genbutsu (Go and See)
    - Lead with Consensus Building
    - Create Commitment to Achievement
4. **RESPECT:** Respect others, make every effort to understand each other, take responsibility and do your best to build mutual trust.
    - Respect for Stakeholders and community
    - Develop Mutual Trust and Mutual Responsibility
    - Be Sincere, transparent and open in all Communication
5. **TEAMWORK:** Stimulate personal and professional growth, share the opportunities of development, and maximize individual and team performance.
    - Have Commitment to Education and Development
    - Have Respect for the Individual; Realizing Consolidated Power as a Team

Instructor Guide Sample

On the following pages is a sample module from our Instructor Guide. It provides the instructor with a copy of the material and a Lesson Plans box. Each Instructor Guide and Training Manual mirrors each other in terms of the content. They differ in that the Instructor Guide is customized towards the trainer, and Training Manual is customized for the participant.

The key benefit for the trainer is the Lesson Plan box. It provides a standardized set of tools to assist the instructor train that particular lesson. The Lesson Plan box gives an estimated time to complete the lesson, any materials that are needed for the lesson, recommended activities, and additional points to assist in delivering the lessons such as Stories to Share and Delivery Tips.

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Sample Module: Understanding Lean

Lean and Six Sigma are buzz-words we hear in business all of the time. Before we get started, let's make sure we all understand just what we mean by "lean" and "Six Sigma".

About Six Sigma

Estimated Time	10 minutes
Topic Objective	To understand that "Six Sigma" is a methodology for improving processes.
Topic Summary	• Six Sigma is a structured, data-driven process of solving critical issues from a business perspective that we haven't been able to solve with current methodology. • Six Sigma is the single most effective problem-solving methodology for improving business and organizational performance. • The common measurement scale is called the Sigma capability or Z and is a universal scale. It is a scale like a yardstick measuring inches or a thermometer measuring temperature. • The scale allows us to compare business processes in terms of the capability to stay within the quality limits established for that process. • The Sigma scale measures Defects per Million Opportunities (DPMO). Six Sigma equates to 3.4 defects per million opportunities.
Materials Required	List the activities below on a flip chart.
Planning Checklist	Before the workshop, write the following on the flip chart: For every 300,000 letters delivered With 99% delivery rate = With Six Sigma = For every 500,000 computer starts With 99% start rate = With Six Sigma = Out of 450,000 order lines per month With 99% order fills = With Six Sigma =
Recommended Activity	Have the group work on the numbers below. Here are the answers: For every 300,000 letters delivered With 99% delivery rate = 3,000 wrong deliveries With Six Sigma = 1 wrong delivery For every 500,000 computer starts With 99% start rate = 5,000 crashes

	With Six Sigma = >2 crashes Out of 450,000 order lines per month With 99% order fills = 4,500 broken promises With Six Sigma = >2 broken promises
Stories to Share	Motorola, the place where Six Sigma began, saved $2.2 billion in four years using Six Sigma. GE saved $2 billion over 3 years implementing Six Sigma. Jack Welch, former CEO became an ambassador of Six Sigma and inspired Corporate America, and the rest of the world to follow.
Delivery Tips	It is important to show the group that Six Sigma is not just about improving efficiencies in a factory or for manufacturing. Here are some examples: • Call Centers (response / resolution time) • Ordering Systems (order time to deliver, order accuracy) • Hospital Systems (Patient Flow) • Human Resource Management (Customer Service Training) • Retail Services (Wait time, Customer Satisfaction)
Review Questions	What is Six Sigma? What and where is it used?

- Six Sigma is a structured, data-driven process of solving critical issues from a business perspective that we haven't been able to solve with current methodology.

- Six Sigma is the single most effective problem-solving methodology for improving business and organizational performance.
- The common measurement scale is called the Sigma capability or Z and is a universal scale. It is a scale like a yardstick measuring inches or a thermometer measuring temperature.
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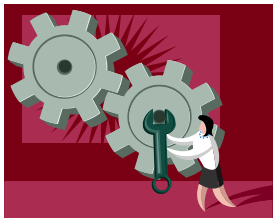
About Lean

Estimated Time	10 minutes
Topic Objective	To understand what is meant by the term “lean”.
Topic Summary	“Lean” means continuously improving towards the ideal and achieving the shortest possible cycle time through the tireless reduction of waste. • It is focused on eliminating waste in all processes • It is about expanding capacity by reducing costs and shortening cycle times • It is about understanding what is important to the customer (e.g. value) • It is not about eliminating people Examples of Lean Projects • Reduced inventory • Reduced floor space • Quicker response times and shorter lead times • Decreased defects, rework, scrap • Increased overall productivity
Recommended Activity	Have group share examples of lean activities in their organizations.
Delivery Tips	In Lean, Value Added means: • Customers are willing to pay for it • It physically changes the product • It’s done right the first time In Lean, Non Value-Added means: • It is not essential to produce output • Does not add value to the output This Includes: • Defects, errors, omission

	• Preparations/setup, control/inspection • Over-production, processing, inventory • Transporting, motion, waiting, delays
Review Questions	What are examples of Lean Projects?



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Examples of Lean Projects:

- Reduced inventory
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- Increased overall productivity

History behind Lean

Estimated Time	10 minutes
Topic Objective	Understand how “lean” became an integral part of modern manufacturing and corporate ideologies.
Topic Summary	The phrase “lean manufacturing” was coined in the 1980's and has its roots in the Toyota Production System. (See later in this module) Most of the basic goals of lean manufacturing are common sense, and some fundamental thoughts have been traced back to the writings of Benjamin Franklin. Henry Ford cited Franklin as a major influence on his lean business practices, which included Just-in-time manufacturing. The founders of Toyota designed a process with inspiration from Henry Ford and their visits to the United States to observe the assembly line and mass production that had made Ford rich. The process is called the Toyota Production System, and is the fundamental principle of lean manufacturing. Two books have since shaped the ideologies of Lean: “The machine that changed the world” (1990) and “Lean Thinking” (1996).
Materials Required	Copy of “Lean Thinking” if possible.
Planning Checklist	Obtain a copy of “Lean Thinking” before the workshop
Recommended Activity	Pass around “Lean Thinking” for participants to look at.
Stories to Share	In 1910 Henry Ford moves his factory into Highland Park, the “birthplace of lean manufacturing”, with continuous flow of parts.

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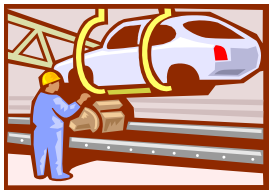
Toyota Production Systems

Estimated Time	10 minutes
Topic Objective	Understanding the TPS system on which modern manufacturing is modeled upon.
Topic Summary	The Toyota Production System (TPS) is a mindset and management system that embraces continuous improvement. TPS organizes manufacturing and logistics, including interaction with suppliers and customers. Originally called "Just In Time Production," it builds on the approach created by the founders of Toyota. TPS revolves around 5 simple steps: 1. Define Value of your product > Make it according to Customer needs and Customer Defined 2. Identify Value Stream of your product > Follow the product and identify unnecessary actions 3. Study the Flow your product > Eliminate All Waste 4. Make only what the customer orders > Produce Just In Time for Demand 5. Strive for Perfection > Continuous Improvement. Good enough is never enough.
Materials Required	Handout: The TPS House
Planning Checklist	Print out one TPS House-diagram per participant
Recommended Activity	Have participants review the TPS House and encourage them to share other ideologies and manufacturing processes they are familiar with.
Delivery Tips	If you handed out the TPS-House Diagram at the beginning of the workshop, this activity should go smoothly.
Review Questions	What does TPS stand for?



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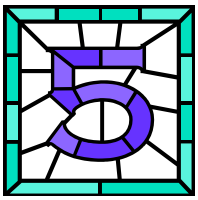
The Toyota Precepts

Estimated Time	10 minutes
Topic Objective	To understand the five precepts of TPS.
Topic Summary	According to Toyota, consistency is central to the success of TPS. Consistency comes from Operational excellence. The operational excellence is based on the quality improvement tools and methods in the TPS: 1. Challenge (Challenge existing methods) 2. Kaizen (Improve what's not working) 3. Genchi Genbutsu (go and see for yourself) 4. Respect (Towards employees, Customers, Suppliers, Community) 5. Teamwork (Stand together undivided)
Materials Required	Handout: My Improvement Plan (MIP)
Planning Checklist	Print out one copy of MIP per participant
Recommended Activity	Have participants review their MIP and fill out the information based on the 5 precepts.
Delivery Tips	If you handed out the MIP at the beginning of the workshop, this activity should go smoothly.
Review Questions	Does your MIP pass the check point questions?

The five methods defined by Toyota contain some basic principles:



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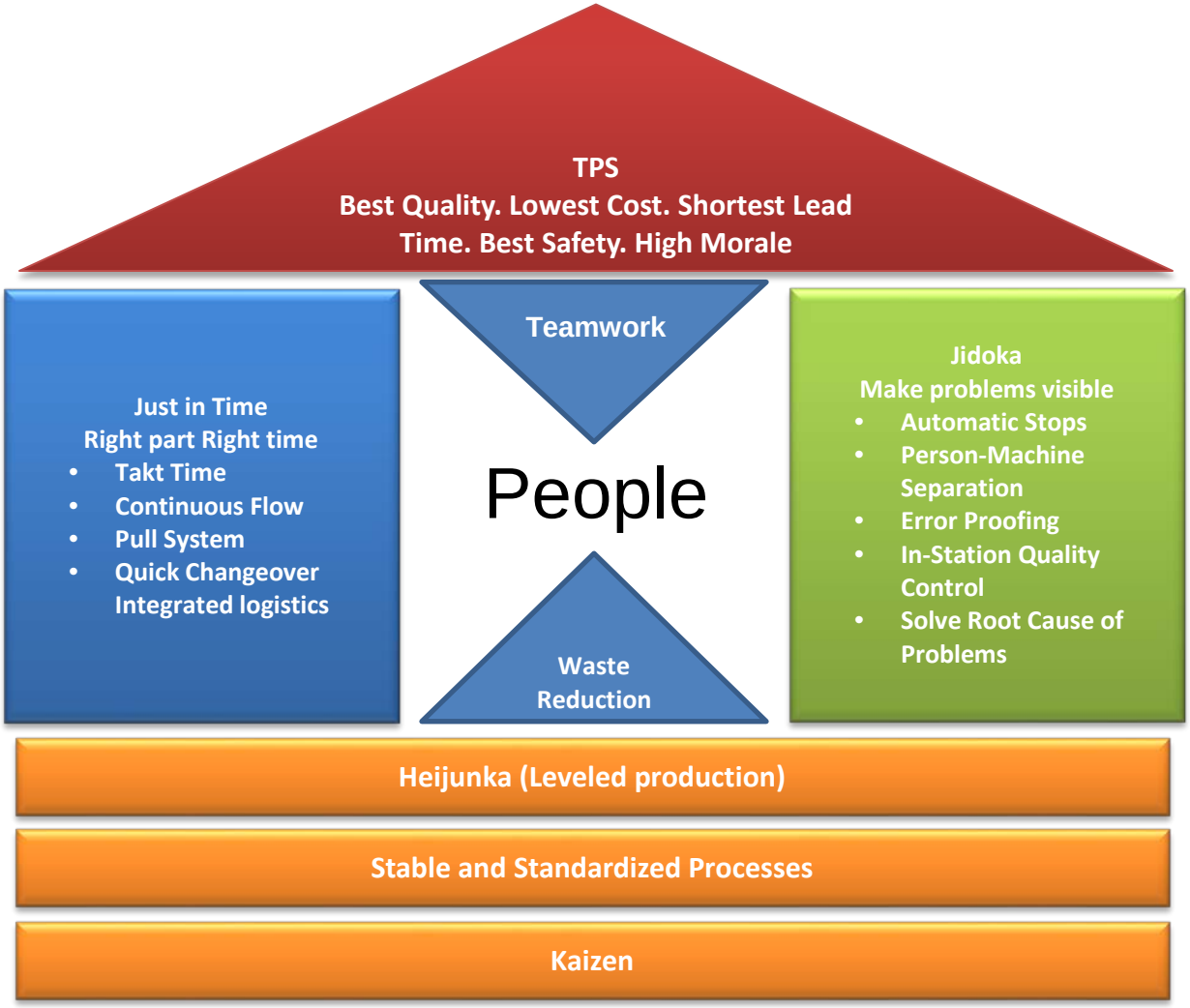
Activities

During the facilitation of a lesson Worksheet or Handout may be utilized to help present the material. If a lesson calls for a Worksheet or Handout it will be listed in the Lesson Plan box under Materials Required. The trainer can then utilize the Activities folder for the corresponding material and then provide it to the participants. They are all on separate Word documents, and are easily edited and customized.

Below you will see the Worksheets or Handouts that are utilized during the training of the above lesson. They are located in the Activities folder and can be easily printed and edited for the participants.

Sample Handout: The TPS House



Sample Worksheet: My Improvement Plan (MIP)

- **CHALLENGE:** What is the existing method or work process I want to improve?

- **IMPROVE:** What is not working in the existing method or process? Describe flaws and quantify if possible. How will the methods and process work with your proposed change?

- **GENCHI:** What observations have you done by going to the source of the problem in your project?

- **RESPECT:** List who is affected by the change you are proposing. Consider how they could be involved.

- **TEAM WORK:** Review your list of individuals above. Who can you work with to implement the change swiftly?

Quick Reference Sheets

Below is an example of our Quick reference Sheets. They are used to provide the participants with a quick way to reference the material after the course has been completed. They can be customized by the trainer to provide the material deemed the most important. They are a way the participants can look back and reference the material at a later date.

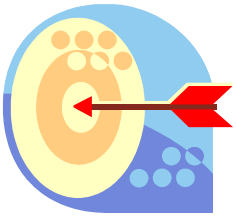
They are also very useful as a take-away from the workshop when branded. When a participant leaves with a Quick Reference Sheet it provides a great way to promote future business.

Lean Process And Six Sigma

Pull

- Push is a traditional manufacturing philosophy - to produce based on estimated forecast of demand.
- The opposite of Pull production is Push production.
- In Pull production, the customer demand instance triggers a part being pulled from upstream.
- Using the Pull philosophy each operation only pulls product from its prior operation when real demand exists at the downstream operation. This results in a continuous flow
- This will result in many positives for the organization ranging from reduced cycle time, to reductions in inventory to improved customer service levels.

The Goals of TPS



The Main goals of the Toyota Production System are to eliminate three types of waste:

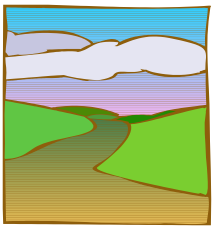
- Overburden or stress in the system (Muri)
- Inconsistency (Mura)
- Waste (Muda)

The elimination of waste (Muda) is the most common way to look at the effects of TPS. We will look at Waste in greater detail in Module Seven.

There are four rules to TPS:

1. All work shall be highly specified
2. Every customer-supplier connection must be direct
3. The flow of products and services must be simple and direct.
4. Any improvement must be made according to the scientific method at the lowest possible level in the organization.

Value Stream



- First step in removing non-value added steps from a process is to map the process, following the actual path taken by the part in the plant.
- Walk the full path yourself (Genchi Genbutsu).
- Draw the path on a layout and calculate the time and distances traveled (aka “spaghetti diagram”).

Certificate of Completion

Every course comes with a Certificate of Completion where the participants can be recognized for completing the course. It provides a record of their attendance and to be recognized for their participation in the workshop.

CERTIFICATE OF COMPLETION

[Name]

Has mastered the course

Lean Process And Six Sigma

Awarded this _____ day of _____, 20___

Presenter Name and Title

_____

PowerPoint Sample

Below you will find the PowerPoint sample. The slides are based on and created from the Training Manual. PowerPoint slides are a great tool to use during the facilitation of the material; they help to focus on the important points of information presented during the training.

Sample Module: Understanding Lean

Lean and Six Sigma are buzz-words we hear in business all of the time. Before we get started, let's make sure we all understand just what we mean by "lean" and "Six Sigma".

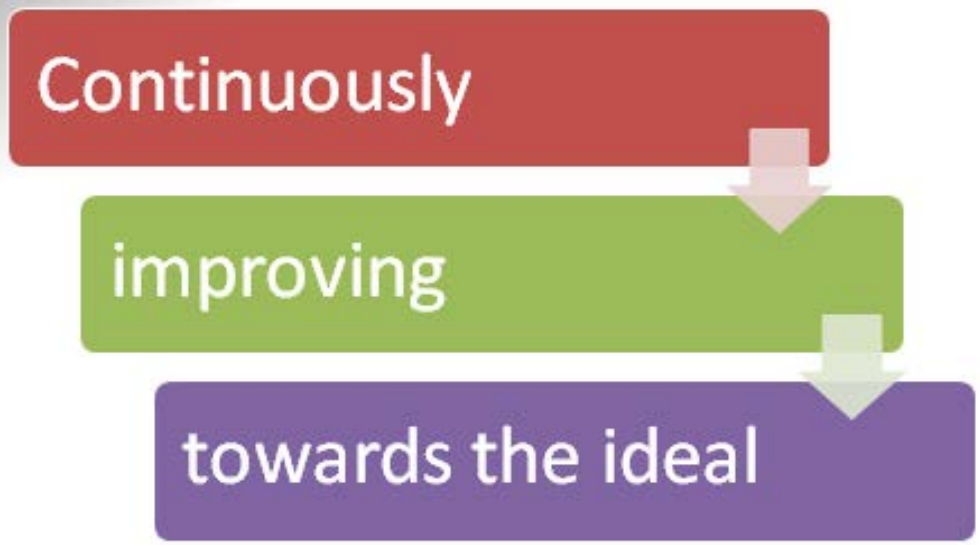
Six Sigma is the most important training thing we have ever had. It's better than going to Harvard Business School.

Jack Welch

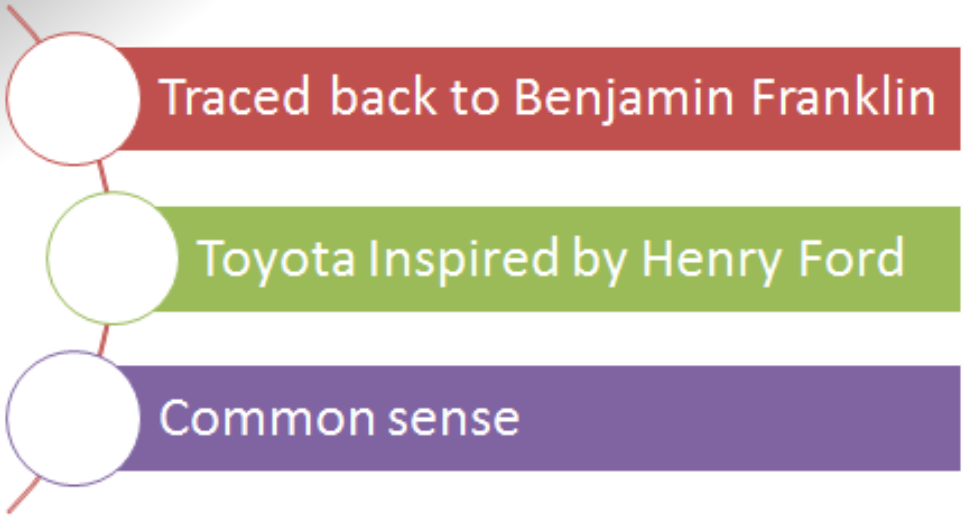
About Six Sigma

- Structured
- Data driven
- Problem solving
- Improvement process

About Lean



History Behind Lean



Toyota Production Systems

- Define Value of your product
- Identify Value Stream
- Study the Flow
- Make only what the customer orders
- Strive for Perfection

The Toyota Precepts

- Challenge
- Kaizen
- Genchi genbutsu (Go and see)
- Respect
- Teamwork

Full Course Table of Contents