Life Cycle Institute is the human performance practice at Life Cycle Engineering (LCE), a 39-year old engineering solutions company, and the leader in asset management and Reliability Excellence®. We are a team of learning, leadership, project management and change management professionals. We integrate the art and science of learning and change to help individuals and organizations learn and adapt. This is achieved by building knowledge, skills and engagement.

LCE emphasizes a risk-based asset management approach to reliability based on international asset management standards. LCE’s Asset Management System Framework confirms proper controls are in place and reliability analysis is used to promote continuous improvement.

LCE’s reliability engineering solutions and competency-building programs help clients prioritize resources for their most critical assets, design an infrastructure for continuous improvement, and align asset life cycle management with corporate objectives.
Facilitators Make the Difference

Life Cycle Institute class leaders are called facilitators. This acknowledges that in addition to being experienced authorities on their topic, they have a passion for teaching and have developed this passion into a set of learning facilitation skills.

We work with them to build their facilitator skills through development activities. Even though we call them facilitators, they are really both a facilitator and instructor, and can apply either style based on participant needs and the learning objectives.

An instructor is a content resource. Most content experts share their knowledge through writing or lectures. It is up to participants to adapt their personal style and prior knowledge to gain new skills and knowledge.

A facilitator is a process manager first, a content resource second. Facilitators use their knowledge of how people learn to create an active environment that embraces participants’ prior knowledge and unique learning styles.

Life Cycle Institute facilitators complete a rigorous qualification process and are continuously engaged in activities that enhance their effectiveness at facilitating learning.

Some of the competencies demonstrated by Life Cycle Institute facilitators include:

• Learning about the participants and adapting the learning objectives and content to meet their needs
• Engaging everyone in low-risk daily starters and frequent active reviews related to the content
• Using adult learning principles that enhance motivation and improve retention
• Actively involving the participants every eight to 15 minutes
• Using redirected and reverse questions to engage all participants
• Setting up exercises, case studies, games, and simulations by giving clear directions and drawing out reactions and learning points

What our students are saying about our facilitators:

“Best part was instructor going around the room asking each person to come up with a question. Great stuff came out of it. This has been one of the best taught courses I have had in years. The facilitator kept me engaged and interested at all times. Great, real-life application stories.”

Allen Jones, Boeing

“Throughout the training, the facilitator demonstrated excellent knowledge and understanding of the subject matter at hand. He delivered the material in a way that kept the audience engaged and interactive. His passion for teaching really shined through.”

Tony Geary, Alcoa

“Great instructor. Lots of interaction, not death by PowerPoint. Lots of knowledge and excellent teacher. Very polished and professional.”

Steve Gardner, US Army Corps of Engineers

“The instructor’s knowledge obviously came from first-hand experience. It is easier to relate to someone who has been there, done that and knows how plants really operate!”

Chris Gross, North American Stainless
IAM Certificate Workshop

Life Cycle Institute has partnered with The Woodhouse Partnership to offer the Institute of Asset Management (IAM) certificate training and exam.

IAM Asset Management Certificate Training

This course provides a grounding in the principles and practice of Asset Management. The content is aligned to PAS 55, ISO 55000, and the Institute of Asset Management (IAM) competency framework, with the objective of preparing students to pass the Principles of Asset Management exam.

Modules Addressed

- C1 Introduction
- C2 Asset-Related Risk
- C3 Asset Lifecycle Management
- C4 Asset Information
- C5 Financial and business impact

The importance of the integration of asset care into the broader business vision and strategy of the organization is stressed throughout the course. The course is delivered through two days of interactive classroom teaching, including reinforcing exercises and tests, supported by workplace assignments and directed reading. The two-hour IAM Certificate exam is offered on the morning of the third day.

IAM Certificate Exam

The IAM Certificate exam is created by the IAM Examinations Board. It consists of 60 questions, delivered online in the form of multiple-choice questions at the IAM exam venue at Life Cycle Institute.

The Principles of Asset Management examination consists of the following five compulsory modules:

1. The Principles of Asset Management (20 questions)
2. Asset Management Policy, Strategy and Planning (10 questions)
3. Managing Asset Life Cycle Decisions and Activities (10 questions)
4. Assessing and Managing Asset Management Risks (10 questions)
5. The Financial and Business Impact of Asset Management (10 questions)

Who Should Attend

Experienced engineers and asset management professionals

Life Cycle Engineering and The Woodhouse Partnership (TWPL)

LCE and TWPL have formed an alliance to promote the application of international standards and best practices in risk-based asset management. This alliance combines 50 years of experience in asset management and reliability engineering with in-depth knowledge in energy and utilities, oil and gas, and health sciences.

TWPL is a world leader in applying the ISO 55000 asset management standard and PAS 55, using its proprietary models, diagnostic and software tools to conduct asset management assessments and develop implementation roadmaps. LCE is a global leader in reliability and maintenance best practices and the holistic implementation of asset management systems.

The LCE / TWPL team offers a unique capability to help companies align company policy and strategy with asset management objectives, based on stakeholder expectations. The team also delivers asset management, maintenance, and reliability engineering training.
Leadership is the starting line and linchpin of any successful asset management strategy. ISO 55000 states, “Top management should create the vision and values that guide policy, practice and actively promote these values inside and outside the organization” (2.5.3.3). In this two-day course you will practice doing this with a unique template developed by Life Cycle Engineering.

You will see examples of asset management strategies, learn the asset management policy components, and develop a draft policy for your organization. Based on this draft policy, you will identify specific asset management objectives and outline a strategy. Armed with this policy, strategy and objectives document you will leave the workshop prepared to guide the development of the underlying asset management plans.

This is an active workshop led by experienced asset management professionals who have designed, developed and implemented asset management strategies for a wide variety of organizations around the globe.

Who Should Attend
This course is designed for any manager acquiring, managing, operating, maintaining or disposing of physical assets. This should include leaders and middle managers across the organization. It is ideal for joining teams of managers to establish a common language and vision for linking the asset management system to organizational goals.

• Operations Managers
• Maintenance Managers
• Reliability Engineers
• Capital Project Engineers
• Asset Owners
• Asset Managers
• Organizational Development
• Quality Personnel

What our Students are Saying:

“\We came here as a first exposure to the standard. This course provided that and more. Facilitators were knowledgeable and kept the pace moving and class interesting.\”

John Batrouny, ATI Metals

“The course is well-designed and fits into a comprehensive strategy to implement structured AM to most any company or industry. The facilitators are knowledgeable and engaging, and have real-world experience to share.\”

Steven St Clair, Puget Sound Energy
Who Should Attend

Successful maintenance planning and scheduling programs require the disciplined application of proven processes and interdepartmental partnerships. It is important for departments that are influenced and impacted by the processes to understand the processes. People in the following roles should participate in this training:

- Maintenance Planner/Schedulers
- Production Supervisors
- Storeroom Managers
- Maintenance Managers
- Operation Coordinators
- Maintenance Supervisors
- Plant Engineers

Planning and scheduling is one of the fastest and most effective investments an organization can make to improve productivity and availability. The processes participants learn in this class will allow for planning and control of maintenance resources. Equipment reliability is increased. Costs and availability of maintenance stores are improved. Waiting times, unnecessary parts and inaccurate information are eliminated. Budgeting is easier and more accurate. Maintenance tasks are as much as 50% more efficient in terms of costs and time.

This five-day course teaches proven processes that are fundamental to effective planning and scheduling and successful CMMS/EAMS deployment. Participants engage in hands-on activities that build systems-independent process knowledge and skills they will be able to apply immediately.

Learn How To

Define the planner/scheduler environment

- Understand common maintenance problems, delays and inefficiencies
- Define the nature of repair (reactive) vs. maintaining (proactive)
- Sustain the commitment and support of management

Develop an effective planning program

- Apply a maintenance assessment process and a proactive maintenance timeline
- Coordinate the roles and responsibilities of maintenance supervisors and planners
- Differentiate between reactive, preventive and predictive maintenance
- Explain work measurement to the maintenance work team
- Use performance metrics, PM compliance, schedule compliance, backlog, efficiency, and labor utilization
- Define the essentials of critical path planning

Manage scheduling and coordination

- Define the term backlog and its relationship to estimating
- Balance manpower demand

Create effective job plans

- Prepare a detailed job plan
- Plan individual job activities

What our Students are Saying:

"This class was a great experience…it was extremely informative and the instructor was outstanding and very knowledgeable of the planning function based on real world experiences! It was definitely worthy of my time and effort."

Larry Jeffcoat, Michelin

"The instructor’s no-nonsense delivery was a breath of fresh air in a topic that is usually riddled with acronyms & buzzwords. This real world approach is exactly what is needed in order to master these concepts."

Brian Buzard, Central Arizona Project
Management Skills for Maintenance Supervisors

Management Skills for Maintenance Supervisors teaches supervisors how to lead a world-class maintenance department using planning and scheduling best practices to drive work execution, and motivational and time-management techniques to improve maintenance worker productivity. The result is improved staff motivation, lower employee turnover, increased output and reduced waste of resources.

Participants will build an action plan for managing their human capital while developing an effective program for managing assets. Supervisors will learn how to leverage their personal supervisory style, apply time management techniques, run effective meetings and improve maintenance delivery. Explore how to make the transition from a technician to a supervisor and investigate common supervisory staffing issues like supervising friends, orienting new employees and delegating responsibility when necessary.

This three-day course uses case studies, group discussion, reflection activities and exercises to help you apply what you learn to your work situation.

Who Should Attend

This course is designed for maintenance managers and supervisors. Ideal candidates either supervise maintenance workers or manage maintenance through supervisors. This course is also recommended for people looking to improve their skills, or those being considered for advancement. Supervision from other related areas such as Operations, Warehouse and Housekeeping are also invited.

Learn How To

List the roles, goals and motivation of a Maintenance Supervisor

Describe maintenance management critical success factors:
• Using planning and scheduling to drive work execution
• Techniques to improve worker productivity
• Managing meetings effectively

Practice techniques to effectively manage people:
• Methods to handle problems with employees, vendors, coworkers
• Decision making
• Smart delegation
• Supervisory staffing issues: orientation, discipline, supervising friends, and substance abuse issues

Build a management skills action plan:
• Assess your supervisory style to identify strengths and areas for development
• Apply time management techniques
• List ways to control reactions and make good decisions in times of stress
• Outline ways to make the change from technician to supervisor

Outline an effective program to manage your assets
• Best practices for applying preventive maintenance, predictive and condition-based technologies
• Guidelines for assessing your existing PM system and making improvements

What our Students are Saying:

“I utilize LCE for all of my training and the training of my team. Every course I have taken at LCE rejuvenated my enthusiasm as well as provided key fundamentals that I was seeking. LCE obviously provided the “elite” in the industry to train which is an added plus!”

Patrick Banister, Nektar Therapeutics

“This is my second LCE course, and so far the experience has been consistently positive. This has been another excellent educational experience.”

Steven St Clair, Puget Sound Energy
Who Should Attend
Anyone involved in materials – directly or indirectly – will find value in Materials Management, including:

• Materials Managers
• Maintenance Manager
• Purchasing
• Storeroom Personnel
• Planner/Schedulers
• Operations Managers

Managing a storeroom is a balancing act. Storeroom managers must have the materials available to keep production flowing while minimizing inventory investment.

In this three-day course, you will learn how to ensure the right parts are in the right place at the right time. When you apply the knowledge and skills learned in this class, quality will increase and costs will decrease. You will be able to manage your storeroom in a way that successfully balances the needs of operations and maintenance while optimizing your inventory and carrying costs.

Learn How To
• Discuss the materials management challenges that organizations are facing
• Identify the elements of materials management
• Discuss how materials management fits into the overall umbrella of Reliability Excellence
• Discover the characteristics and steps involved in effective materials management processes
• Discuss the basic steps involved in implementing effective inventory control best practices
• Summarize the basic steps involved in implementing effective warehouse management best practices
• Describe how a CMMS can support materials management processes and best practices
• Identify contributors to total cost of materials
• Practice techniques to manage inventory investment
• Define the standard set of basic materials management key performance indicators
• Develop an (inventory/investment management processes) action plan

What our Students are Saying:

What is great about this course is that the content is state-of-the-art and packaged neatly. It would take years to learn this by experience and it is not otherwise documented.

Wayne Groover, Chaparral Steel

This was a great course which will help me better develop my work processes in the stockroom.

Bill Csuk, Wrigley Manufacturing
Planning for Shutdowns, Turnarounds and Outages

After attending this three-day course, you will save time and money on your next shutdown. Our promise for this program is that you will have a new and deeper understanding of how to effectively manage large maintenance jobs such as power plant outages and refinery refits. This course is 85% concerned with the time before the shutdown begins. The remaining 15% is the execution tactics to keep the project on course.

This course includes specific checklists, procedures, strategies and important outside resources that will improve your current shutdown planning and execution. The course also includes examples to demonstrate the major points.

NOTE: While some industries use the phrases outage, shutdown and turnaround interchangeably, other industries ascribe very specific and different meanings to the terms. From the perspective of planning, however, in this course we have decided to use the terms interchangeably.

Learn How To

• Develop a checklist of everything to consider before the shutdown and when to consider it
• Evaluate the effectiveness of your current shutdown effort
• Measure your shutdown efficiency by benchmarking with world-class shutdown strategies
• Formulate good contractor relations to further reliability
• Unearth tools and technologies that can smooth the process and create a backbone for effective plant maintenance and reliability

• Collaborate and balance out contractor engagement and in-house staff to obtain an effective workflow
• Reduce unnecessary costs by properly planning, executing and closing your shutdown

Who Should Attend

Successful shutdowns, turnarounds and outages require the disciplined application of proven processes and interdepartmental partnerships. It is important for departments that are influenced and impacted by the processes to understand them. People in the following roles should participate in this training:

• Maintenance Planner/Schedulers
• Production Supervisors
• Storeroom Managers
• Maintenance Managers and Supervisors
• Operation Coordinators
• Plant Engineers
• Outage Coordinators
• Reliability Engineers
• Facilities Managers
• Project Managers
• Asset Management Specialists
• Quality Assurance
• Procurement

What our Students are Saying:

“I was truly enlightened on the matters of real maintenance and all associated practices that make up the system. It has also drawn me to implement and establish a good maintenance system in my company in days to come. I appreciate most the real case studies used in class and can relate to every topic.”

Patrick Banister, Nektar Therapeutics

“Planning is simple. However, the majority fail to perform or execute tasks due to poor planning. This event has acquired knowledge and goal setting for my company in the future.”

Petronas Gas Berhad, Malaysia
Predictive Maintenance Strategy

Who Should Attend
Maintenance managers, PdM managers, maintenance professionals, continuing education students, and any person responsible for justifying or managing duties related to a PdM program.

Learn How To
Explain how a combination of predictive maintenance, condition monitoring and non-destructive testing mitigates risk and optimizes your asset maintenance plan.

- Vibration analysis
- Thermography
- Tribology (oil analysis)
- Ultrasonics
- Motor circuit analysis

Recognize visual inspection as a component of a PdM program.

Draft a predictive maintenance strategy that incorporates critical success factors in the following areas:

- Data and measurement requirements
- Planning and set-up
- Monitoring the program
- Showing results

Compare your current PdM program to best practices and build a plan to meet your PdM goals.

What our Students are Saying:

“Excellent material! I was impressed with how the course stressed the importance of planning and scheduling. Additionally, my eyes were opened to the importance of specific and repeatable documented maintenance tasks.”

Joe O’Brien, Goodrich

“The facilitator is an authority in the course subject matter. He was dynamic, enthusiastic and humorous. The content was delivered in a logical manner and the facilitator made sure everyone understood.”

Brian Berg, Goodrich

Predictive maintenance is not a tool, technique or certification. Predictive maintenance is a philosophy that uses the equipment’s operating condition to make data-driven decisions and improve quality, productivity and profitability. Unlike industry courses that focus on applying specific technologies like vibration monitoring or oil analysis, this course focuses on establishing, managing and sustaining results from a comprehensive PdM program.

The Predictive Maintenance Strategy course considers predictive maintenance as a component of a larger asset management strategy to diagnose, prevent and postpone failures. During this three-day course, you will learn the theory and application of multiple PdM technologies. You will review critical success factors of results-producing PdM programs. Through group activities and case studies, you will determine which predictive technologies to use, how to set goals for your program, track progress and practice how to communicate results to different stakeholders. By the end of the session, you will have outlined what a successful PdM program can look like at your organization.

This course is one of the four courses that lead to the Reliability Engineering Certification program described on page 16.
Learn how a Reliability Engineer (RE) drives the value assets can deliver by overseeing asset life cycle performance from concept through disposal. REs learn to build the business case for reliability, design reliability into a process before it’s built, identify operating risks and solve problems in all areas of asset management.

By the end of this course you will be equipped to build and sustain a strategic reliability engineering program and gain support to achieve your organization’s reliability goals.

This course will cover all of the roles defined in the Institute of Asset Management (IAM) Competencies Framework - Policy Development, Strategy Development, Asset Management Planning, Implement Asset Management Plans, Asset Management Capability Development, Risk Management and Performance Improvement, Asset Knowledge Management. Specific emphasis will be placed on policy, strategy, planning, and capability-building.

**Who Should Attend**

Ideal for those involved in asset reliability, capacity and predictive maintenance programs. Anyone responsible for decreasing repetitive failures and seeking investments to improve plant reliability should attend. This includes reliability engineers, reliability technicians and reliability personnel.

The IAM course objectives this program is designed to advance include:

**IAM Course Objective B1 – The Asset Management System**
Describe the asset management system stages, components, requirements and assessment methods.

**IAM Course Objective B3 – Effective Asset Management Strategies and Plans**
Describe the differences between an asset management strategy and plan. Identify the main principles of asset whole-life costing.

**IAM Course Objective B4 – Building an Asset Management Organization**
Describe the implications of asset management in structure and roles. Identify how to assess asset management performance.

**Learn How To**

- Describe the relationship between reliability and asset management
- Define how reliability impacts business performance
- Describe the reliability engineer role and responsibilities
- Describe the main components of an asset information system
- Explain the components of an asset management plan
- Describe how sustainability principles can be applied to asset management planning
- Assess your organizational structure for asset management and build a plan to address gaps
- Assess internal asset management capabilities and develop a plan to address gaps
- Explain how to hold external suppliers accountable for asset management capabilities
- Create a business case to support reliability investment options

This course is one of the four courses that lead to the Reliability Engineering Certification program described on page 16.

This course is designed to comply with the Institute of Asset Management’s Competencies Framework.
Reliability Excellence for Managers

Join the fast-growing group of maintenance and reliability leaders who have improved their organizations’ performance and advanced their careers by applying Life Cycle Engineering’s Reliability Excellence® framework.

<table>
<thead>
<tr>
<th>CLIENT</th>
<th>RESULTS</th>
<th>ROI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharma Products</td>
<td>Increased capacity 15% Reduced COGS 5%</td>
<td>ROI &gt; 20:1 (18 months)</td>
</tr>
<tr>
<td>Healthcare Products</td>
<td>Increased availability &gt;15% Improved OEE 10% Reduced maintenance costs 20%</td>
<td>ROI &gt; 15:1 (3 years)</td>
</tr>
<tr>
<td>Primary Metals (34 Plants)</td>
<td>Reduced maintenance spending 10% Increased capacity (%) confidential</td>
<td>ROI 5:1 to 16:1 (3 years)</td>
</tr>
<tr>
<td>Metals Processing</td>
<td>Reduced maintenance spending 20% Increased anode capacity 10% Increased aluminum capacity 4%</td>
<td>ROI 16:1 (3 years)</td>
</tr>
<tr>
<td>Steel</td>
<td>Increased capacity through OEE improvements of greater than 2%</td>
<td>ROI &gt; 11:1 (3 years)</td>
</tr>
<tr>
<td>Beverage</td>
<td>Increased capacity of high speed process &gt; 25% / Reduced COGS 10%</td>
<td>ROI &gt; 20:1 (24 months to date)</td>
</tr>
</tbody>
</table>

Reliability Excellence for Managers is probably the best training class I’ve ever attended since being in this industry. The class provided relative information for the position our company is in today.

Pulp Mill Manager

The Reliability Excellence for Managers course was very stimulating. In fact, it is the best course I’ve ever attended! The course materials were excellent and the facilitator was well prepared. He used outstanding instructional techniques and is truly a subject matter expert.

Maintenance/Reliability Planner

The Reliability Excellence model is a flexible, scalable framework that has been adopted by dozens of Fortune 500 organizations as their framework for reliability and asset management.

Reliability Excellence for Managers (RxM) is the original reliability program designed to build competency through multiple classroom learning sessions and practical application over a year. Each year the content is updated to include our findings from new research, assessments, and application. In the past decade over 600 people, from nearly 200 organizations, have enrolled in the program.

You will learn how to customize and apply the tools and processes required to develop, implement and sustain world-class, reliability-based performance and a culture of continuous improvement.

Program facilitators are certified reliability professionals with decades of experience implementing reliability. The program is designed and maintained by a team of respected thought leaders and authors in maintenance and reliability, including Keith Mobley, Joel Levitt, and Tim Kister.
RxM is delivered in four, three-day sessions with a six to eight week interval between sessions. After each session, you are encouraged to apply what you have learned to reinforce learning and raise retention. When you return for the following session, you will share your experiences, thereby gaining a deep understanding and ability to sustain your new learning.

Over the four-part program, you will build a business case for Reliability Excellence. You will learn how leadership and culture impact a change initiative, and how to become a change agent to help keep your organization reliable, agile and competitive. You will become aware of the business processes associated with world-class performance. Finally, you will build a plan to strengthen and stabilize the charge for reliability.

Secure your Certified Maintenance and Reliability Professional (CMRP) credential by taking the exam proctored at the conclusion of the last session. While RxM is not a CMRP prep course, many of the more than 150 participants who have taken an LCE-proctored CMRP exam cite this program as contributing to their success.

Learn How To

Session 1 - Building the Foundation for Rx
(Topics related to SMRP BoK Pillar 1 – Business and Management)
• State the driving factors behind an Rx-based transformational change
• Build a business case for Rx
• Outline the overall philosophies of Reliability Excellence
• Develop Rx functional roles, responsibilities and partnerships within the organization
• Recognize the need for active leadership
• Define governing principles
• Describe how to build an enabling infrastructure, including organizational structure, budget and cost management
• Recognize the correlation between OHS and reliability
• Explain how Rx enables LEAN, Six Sigma, TPM
• Create an Rx A3

And more ...

Session 2 – Leading and Managing Change
(Topics related to SMRP BoK Pillar 4 – Organization and Leadership)
• Differentiate between being effective and efficient
• Differentiate between technical and transformational change
• Assess systems, structures and leadership style
• List five critical success factors for implementing change
• Describe four change roles and their primary activities
• Summarize physiological and psychological effects of change
• Develop an Rx risk management plan
• Develop a Gemba walk job aid

And more ...

Session 3: Best Practice Business Processes and Optimization
(Topics related to SMRP BoK Pillar 2 – Manufacturing Process Reliability and Pillar 3 – Equipment Reliability)
• Discuss the role of standardized processes and procedures.
• Summarize the critical role of work management in success and sustainability
• Discuss methods to lower total cost of ownership and extend useful life of capital assets
• Examine how to eliminate waste and non-value-added activities by implementing a loss elimination process
• Define key requirements of effective materials management
• Discuss how the reliability engineering function manages risks and optimizes performance
• Outline an effective Life Cycle Asset Management program

And more ...

Session 4 – Sustaining Reliability and Continuous Improvement
(Topics related to SMRP BoK Pillar 1 – Business and Management and Pillar 5 – Work Management)
• Develop Rx key performance indicators (KPIs)
• Discuss how a company dashboard and balanced scorecard report Rx progress to leadership
• Use a role and responsibility matrix to increase engagement
• Discuss 4 components of audits and assessments
• Discuss how equipment history and asset process design sustain reliability
• Use tools to support work management
• Draft a master plan to a successful Rx transformation
• Complete a business case for Rx

And more ...
Risk-Based Asset Management

Explore how to improve asset performance by building effective asset risk, operations and maintenance plans – three major components of a life cycle asset management plan. Learners are exposed to the concepts of designing for reliability, reliability-centered maintenance, failure risks and control strategies, restoration vs. disposal investments, and continuous improvement opportunities.

This course will cover all of the roles defined in the Institute of Asset Management (IAM) Competencies Framework - Policy Development, Strategy Development, Asset Management Planning, Implement Asset Management Plans, Asset Management Capability Development, Risk Management and Performance Improvement, Asset Knowledge Management. Specific emphasis will be placed on implementation, risk, performance improvement, and knowledge management.

Who Should Attend

This is ideal for people responsible for the design, installation, commissioning, operation and maintenance of capital assets and auxiliary equipment. This includes project engineers, reliability engineers, maintenance managers, operations managers, and engineering technicians.

This course is designed to comply with the Institute of Asset Management’s Competencies Framework.

This course is one of the four courses that lead to the Reliability Engineering Certification program described on page 16.

The IAM course objectives this program is designed to advance include:

IAM Course Objective B5 – Implementing Asset Management Plan

- Describe and give examples of approaches, tools, and techniques for life cycle analysis and whole life costing, determining costs and budgets, allocating resources and managing work activities.

IAM Course Objective B6 – Assessing Asset Management Risk and Performance

- Describe and give example of standards, processes, and systems to generate the information required to manage risks.

Learn How To

- Draft components of an asset management plan: risk, operations and maintenance plans
- Describe asset management information required to manage risk and improve performance
- List ways to extend the life of assets and evaluate their effectiveness
- Use a failure mode and effects analysis (FMEA) to analyze risks and map control strategies
- Describe how audits, reviews and key performance indicators drive continuous improvement
- Practice applying a standard process for preventive maintenance optimization
- Determine a plan for asset renewal or disposal based on asset management strategy
- List key internal and external partners to include in asset management

What our Students are Saying:

"My experience at the Life Cycle Institute was wonderful. The content was highly applicable to my job, the facilitator did a fantastic job of providing relevant and interesting examples and the hospitality was great as always."

Michael Atwood, USS-POSCO
Armed with what you learn in this course, you will apply a process for root cause analysis, establish a culture of continuous improvement, and create a proactive environment. Learn to ask the right questions, establish triggers that drive you to the RCA process, and perform cost-benefit analysis.

When you learn to practice true root cause analysis you are able to eliminate the latent roots and stop recurring failures once and for all. In this three-day course, you will be able to develop and implement an RCA program, thus leading your organization to reduced downtime, increased production and a more proactive culture.

Learn How To

Investigate the RCA methods
• Discuss the various RCA philosophies and methodologies
• Discuss the importance of a true RCA process
• Discuss why multiple solutions are important

Develop your RCA program
• Develop a systematic way to define and analyze a problem while determining and implementing solutions
• Outline triggers for the RCA effort based on business case thinking
• Identify roles, goals and responsibilities within your organization
• Create a “Straw Man Template” RCA process for your facility

Prepare to implement the RCA process
• Recognize the importance of the change management component in your RCA implementation
• Use the Root Cause of Success (RCS) process to eliminate common implementation issues
• Choose proper corrective actions and follow-up processes for various situations
• Use proper documentation, including incident reporting and the A3 process

Discuss the advantages and disadvantages and know when to apply PdM technologies

Manage and be able to effectively use 8 RCA tools
• Event and Causal Analysis
• Change Analysis
• Fault-Tree
• Design/Application Review
• Sequence-of-Events
• FMEA
• 5-Why
• Cause and Effect

Who Should Attend

Anyone interested in acquiring or improving advanced problem-solving skills will benefit from this course. Individuals responsible for continuous improvement, solving maintenance and reliability problems and preventing future occurrences of equipment and system failures, including technicians, engineers, supervisors and managers.

What our Students are Saying:

“Everything was great. Course content was clear and easy to understand. Instructor is very knowledgeable about RCA and related subject matter and willing to assist in any way possible to inform and educate.”

Brad Cary,
Sealed Air Corporation

“Life Cycle Institute’s facilitators are truly subject matter experts. I feel confident in taking what I learned to my boss and peers.”

Mickey Kennedy,
Special Metals Corporation

This course is one of the four courses that lead to the Reliability Engineering Certification program described on page 16.
At Life Cycle Institute, we understand that your training needs are unique. Unique needs may require customized, on-site training. Learn from practicing professionals – at your site – at a time convenient for you. While all of our courses can be delivered as private classes, the following courses are private-only.

<table>
<thead>
<tr>
<th>COURSE</th>
<th>WHO SHOULD ATTEND</th>
<th>YOU WILL LEARN HOW TO</th>
<th>DAYS/CEUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership for Shutdowns, Turnarounds and Outages</td>
<td>Maintenance Managers, Maintenance Supervisors, Key Staffers in Heavy Maintenance Environments, Maintenance Engineers, Planners, Project Managers, Outage Planners, Project Engineers, Non-Maintenance Managers responsible for shutdowns</td>
<td>Gain skills to navigate difficult situations and people, make effective decisions on resources, master time management, improve communication with diverse teams and handle the legal side to shutdowns.</td>
<td>2 consecutive days 1.4 CEUs</td>
</tr>
<tr>
<td>Leading People</td>
<td>People who are expected to produce results through people - including managers, supervisors and informal team leaders.</td>
<td>Identify the impacts of low trust and benefits of high trust. Understand how to talk about trust with others. Communicate clear expectations. Motivate team members. Create and implement a coaching plan.</td>
<td>3 consecutive days 2.1 CEUs</td>
</tr>
<tr>
<td>Lean Maintenance</td>
<td>All levels of maintenance personnel, including Supervisors, Planners, Managers, Engineers and Maintenance Workers</td>
<td>Effectively eliminate waste in maintenance operations and projects, and use tools and processes to create a Lean organization.</td>
<td>3 consecutive days 2.1 CEUs</td>
</tr>
<tr>
<td>Maintenance Planning &amp; Materials Management</td>
<td>People working in all areas of cross-functional support in a plant.</td>
<td>Develop Maintenance Planning and Scheduling and MRO Management objectives and targets to achieve reliability goals.</td>
<td>3 consecutive days 2.1 CEUs</td>
</tr>
<tr>
<td>Operator Care</td>
<td>Production Supervisors, Operations Managers and Personnel, Maintenance Supervisors and Personnel, Team Leaders, Lean Implementers</td>
<td>Improve production performance and asset reliability with an Operator Care program. Make data-driven decisions to create effective Operator Care tasks and achieve operational stability.</td>
<td>3 consecutive days 2.1 CEUs</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>Front-line Supervision, Quality Personnel, Team and Business Unit Leaders, Area Managers, Support Staff, Process Operators</td>
<td>Select and apply effective problem-solving methodologies and resolve problems that limit performance using five data analysis tools.</td>
<td>3 consecutive days 2.1 CEUs</td>
</tr>
<tr>
<td>Prosci® Change Management Programs</td>
<td>Executives and Senior Leaders, Managers and Supervisors, Project Teams, HR and Training Groups, Employees</td>
<td>Build internal competency in change management. Deploy change management throughout your organization. Become licensed to use Prosci's change management tools.</td>
<td>Sponsor: ½-day Coaching; 1-day Orientation; 1-day Certification; 3-day</td>
</tr>
<tr>
<td>Reliability and Operations Excellence</td>
<td>Operations Directors, Site Managers, Change Managers, Operations and Maintenance Managers, First Line Supervisors, Reliability Leaders</td>
<td>Apply operations excellence and reliability principles. Learn to deliver competitive advantage through asset productivity, defect elimination and workforce engagement.</td>
<td>2 consecutive days 1.4 CEUs</td>
</tr>
<tr>
<td>Reliability Excellence Fundamentals</td>
<td>Personnel involved in applying or are impacted by Reliability Excellence, and people who influence business process improvement.</td>
<td>Experience the fundamental concepts of Reliability Excellence in order to drive performance improvement efforts within your organization.</td>
<td>3 consecutive days 2.1 CEUs</td>
</tr>
<tr>
<td>Train the Trainer</td>
<td>Subject Matter Experts, Instructors, Facilitators, Team Leaders</td>
<td>Acquire tools &amp; techniques to facilitate effective learning; motivate learners; develop measureable learning objectives; lead content-driven activities.</td>
<td>3 consecutive days 2.1 CEUs</td>
</tr>
<tr>
<td>Make Meetings Matter More! Facilitation Skills for Professionals</td>
<td>People responsible for hosting, organizing and leading meetings</td>
<td>Improve your meetings, from ending on time, to increasing participation, to getting the ever-elusive decision actually made. Learn techniques to reach goals effectively and hold meetings that people actually want to attend.</td>
<td>2 consecutive days 1.4 CEUs</td>
</tr>
</tbody>
</table>
Reliability Engineering CertificationSM (REC)

Secure knowledge and credentials from one of the world's largest and most respected engineering colleges. With the Reliability Engineering Certification (REC), reliability engineers will be well-equipped to reduce risk and increase the value that assets deliver to the triple bottom line.

The REC builds and certifies individual competency in reliability engineering and asset management. Successful candidates will be able to apply reliability engineering to build asset management programs that are consistent with ISO 55000 Asset Management standards.

Participants learn how to:
- Create Asset Management Plans that comply with ISO 55000
- Build and sustain a strategic reliability engineering program
- Prepare control strategies that reduce risk and improve utilization
- Design predictive maintenance strategies and programs
- Establish a root cause analysis program

The REC requires completion of four three-day courses*, and documented application of reliability engineering in the form of a work product. Courses include:
- Reliability Engineering Excellence
- Risk-Based Asset Management
- Predictive Maintenance Strategy
- Root Cause Analysis

You will earn a total of 8.4 CEUs for all four courses.

*At least two courses must be taken at the university granting the certification.

Reliability Engineering Certification Work Product
This requirement demonstrates reliability engineering competency through documented workplace application.
The work product includes:
1. Criticality ranking
2. FMEA
3. RCA
4. Proposed predictive maintenance
5. Presentation and defense

Who Should Attend
The REC is for people who are responsible for improving asset and capacity reliability, decreasing repetitive failures, building sustainable predictive maintenance programs, and creating a culture of continuous improvement.

“Every single instructor that I’ve had has made practical sense of reliability but also not afraid to tackle the more complex issues that deal with reliability and the issues that we face in the industry. I can honestly say that every single aspect or fundamental teaching of reliability that I’ve learned through these courses, I’ve put to practice.”

Juan Rodriguez
Facilities Equipment Engineer at Boeing

Courses in this program are designed to comply with the Institute of Asset Management’s Competencies Framework.
Prosci® Change Management Certification Program

Build change management competency by becoming certified in Prosci’s research-based 3-Phase Change Management Process. Be prepared to lead your organization through both incremental and radical changes.

In this three-day change management program, you will apply Prosci’s change management tools, research and methodology to an actual project at your organization. At the conclusion of the course, you will leave with your change management plan in hand.

Prosci is the world leader in change management best practices and research. Prosci’s methodology has become one of the most widely used approaches for managing the people side of change in corporations and government.

Learn How To

• Develop a Master Change Management Plan
  • Communication Plan
  • Training Plan
  • Coaching Plan
  • Resistance Management Plan
• Handle the Psychology of Change
• Apply Prosci’s 3-Phase Process for Managing Change
• Calculate Return on Investment (ROI) of Change
• Utilize Best Practices in Change Management
• Apply the ADKAR® Model to changes within your organization
• Develop a Change Management Strategy
• Create a Sponsorship Roadmap
• Reinforce Change

Who Should Attend

Prosci’s Change Management Certification Program is designed for employees who are responsible for managing change on a specific project or building change management competency within their organization. This includes project managers, project team members, HR leaders, OD leaders, change management team members, sponsors of change, consultants and trainers.

Change Management Project Training

Change Management Sponsor Program

In this half-day workshop leaders will learn the critical connection between change management and business results, understand their role in effective executive sponsorship, build support and strategically position their projects for success.

Change Management Coaching Program

This one-day program is ideal for managers and supervisors who are helping their employees transition through change. They will learn to use the ADKAR model for individual change, manage employee resistance and lead employees through both radical and incremental change.

Change Management Employee Orientation

This program is designed for front-line employees impacted by change in your organization. Employees will gain a feeling of control over the change process, learn the concepts of change management, understand how to use the ADKAR model as a change tool and engage in the changes underway in the organization.

Delivering Project Results: Change Management Workshop

This results-oriented workshop provides project teams with awareness of how change management can help them meet a project’s intended outcomes. Participants will connect employee adoption and usage to project results, identify when their project needs change management resources, and understand how change management drives project outcomes.
We specialize in change management support, staff augmentation and building change management as an organizational competency.

Research proves that effective change management has a direct impact on three dimensions of project success. Projects that employ effective change management are:

- **6X** more likely to meet objectives
- **4X** more likely to meet schedule
- **3X** more likely to meet budget

Prosci® 2014 Best Practices in Change Management benchmarking report

**We provide resources and expertise to enhance your team’s capabilities in:**

- Business process design/redesign
- Software implementations and technology upgrades
- Organization restructuring
- Merger or acquisition
- Expansion or downsizing

- Business model change or new venture
- New marketing campaign
- Job redesign
- Workforce transition

**Life Cycle Institute Change Management Services**

- Change management strategy
- Change readiness and project risk assessments
- Sponsor and manager coaching
- Integrating change management and project management
- Stakeholder management
- Development of change management plans

**Life Cycle Institute’s team of professionals includes:**

- Managing principals
- Change management subject matter experts
- Prosci-certified change management facilitators
- Communications subject matter experts
- Learning subject matter experts who hold a Masters of Education and Certified Professional in Learning and Performance (CPLP®)
- Project Management Professionals (PMP®)
Learning Design and Development

The development of meaningful objectives, relevant content and a practical understanding of how people learn are critical to a successful learning experience. Life Cycle Institute learning subject matter experts apply proven learning principles and expertise to deliver learning solutions that change behavior to produce results.

Our learning subject matter experts provide:

New Course Development

- Live classroom
- Live online
- Computer-based training (CBT)
- Interactive courseware (ICW)

Course Conversion

- Convert existing courses into active, results-producing learning engagements
- Transform classroom-based courses to synchronous or asynchronous online training

Blended Learning

- Create blended products that include classroom and online training for maximum exposure or just-in-time support

Facilitator Development

Learning Needs Analysis and Competency Assessment

Knowledge Capture

We implement our proprietary 3A Learning® process in all learning engagements. This three-phase learning process encompasses the steps required before, during and after learning to achieve results. More information on this approach can be found in the 3A Learning document on page 22.

Why work with Life Cycle Institute’s learning team?

- Our team consists of learning professionals credentialed with Masters of Education, Certified Professional in Learning and Performance (CPLP®), Project Management Professional (PMP)® and certified change management professionals.
- We incorporate the elements of our 3A Learning process on all engagements
- SME Partnerships: We have extensive experience working with busy subject matter experts, coaching them to embrace innovative and provocative ways to engage learners
- Focus on Objectives: Learning is a process founded on learning objectives that create a clear line of sight on how a learner’s behavior contributes to organizational goals
- Results: Whether you need an online course, classroom-based instruction or a blended learning solution, we will deliver a dynamic solution to meet your business objectives
- Learning Leaders: We leverage a proven course development process that comprises the latest science in adult learning and advanced learning strategies to create participant-centered, active learning products
Project Management Support

We provide project support to organizations so they can remain focused on strategic vision and leave the tactical execution to us. Our team of experienced project managers and facilitators will work with you to complete project tasks, plan and manage communications, and facilitate meetings.

Our project management professionals provide:

**Project Management**
- Stakeholder management
- Risk management
- Requirements collection
- Develop work breakdown structure
- Plan and schedule project activities
- Project reporting

**Communication Management**
- Communication planning
- Developing communication artifacts

**Group Facilitation**
- Facilitation planning
- Strategy meetings
- Problem-solving sessions
- Planning meetings
- Focus team meetings
- Requirements gathering

**Why work with Life Cycle Institute’s project management team?**
- We boast more than 25 years of experience helping clients implement projects
- Our approach to project management is deeply rooted in change management principles, resulting in increased project success
- Project Management Professionals (PMP)® on staff who are experienced in virtual project management
- Communication specialists who can plan and develop effective project communications
Are your large maintenance events more costly and time consuming than planned?

You can improve your STO performance by building competency in STO best practices. These processes will help you manage risk and stay on schedule and budget.

STOs are a substantial financial investment that impacts everyone, from shareholders and board members to front-line maintenance workers. Shutdowns that are not well-planned and managed cause safety risks, unplanned downtime, cost overruns (which can easily run into the millions), and reduced profitability resulting from not returning to full operating capacity on schedule.

Clients who have implemented best practices taught by the Life Cycle Institute have seen these benefits:

- 20% shorter downtime or 20% more work capacity in the same downtime interval
- A 40% decrease in start-up time
- Achieving stable output days sooner
- Less waste
- Greater utilization of resources
- Fewer instances of improvisation
- Increased yield
- Uncompromised quality, safety, and compliance
- Cost savings on labor, materials and rentals

**Shutdown, Turnaround and Outage Competency Improvement Program**

The Institute will provide an STO subject matter expert (SME) for three weeks to help your organization implement new processes and behaviors. We will apply our proprietary 3A Learning® process to create sustained behavior change by establishing clear alignment on expectations, delivering active classroom learning experiences, and providing hands-on coaching.

**Week 1**

In our first week on site we will perform an assessment of the organization’s current shutdown processes and procedures. The STO SME will guide development of processes and procedures that reflect best practices. Following the assessment we will deliver the two-day Leadership for Shutdowns, Turnarounds and Outages course.

**Week 2**

The Life Cycle Institute will deliver the three-day Planning for Shutdowns, Turnarounds and Outages class. Individual coaching on STO planning will also occur this week.

**Week 3**

We will coach your team on applying the tools and techniques learned in the first two weeks. We will guide you on embedding these best practices into your organization's culture so they will be in place for future shutdowns.
Life Cycle Institute’s 3A Learning® Process

“"It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the MOST ADAPTABLE to change.”

Charles Darwin

Those who learn and adapt faster have a competitive advantage.

The measure of change project success is no longer simply completing the project on time and within budget. Increasingly the measure is bottom-line financial performance. Those projects that have achieved desired results typically feature the integration of technology, processes, leadership and people.

In order to change we have to learn. When you integrate the science of learning with the science of change you can produce desired results through people.

Learning is not an event – it is a process. The classroom is important but the fact is that most learning takes place when we apply the tools and techniques we discovered in the learning event. Learning is a process of alignment, assimilation, and application. Only by completing all three steps of this process can we change behavior to produce desired results.

Facilitating high impact learning using 3A Learning

We can better understand and facilitate high impact learning using the 3A Learning model: align, assimilate & apply. Many people are familiar with 3A analysis as a management process – a methodology for thinking, planning, problem-solving and then starting all over again. This process begins by defining the problem, describing the current conditions and defining goals and targets (what’s the desired outcome?). The next step is to analyze what caused the gap between current conditions and the desired outcome and then design a countermeasure to help reach the future state. Finally, the 3A process calls for planning who will do what, plus a follow-up step to capture what has happened, what was learned and what issues remain.

Many elements of this 3A analysis apply to planning for and implementing effective learning strategies. There is a very big gap when it comes to workplace learning – the gap between what often constitutes training and the desired outcome of improved performance. If you invest in learning and nothing changes, has learning taken place?

Time and money are often invested in a learning event or class only to discover that nothing ever changes on the job. It all sounded so good in class and the participant is excited to put the new methods and tools learned into practice. But back at the workplace the boss is still asking the same questions and expecting the same results. Or the processes and circumstances in the workplace are so different from those described in class that it becomes a struggle to actually apply what was learned.
3A Learning - Alignment Phase

Before participating in a learning event participants should have a thorough understanding of what they are expected to learn, how their behavior is expected to change, the results they are expected to achieve, and how these results contribute to the overall goals of the organization.

When this step is skipped, participants attend the learning event and are left entirely on their own to determine what they are supposed to do with what they learn. This often leads to a disconnect between participants and their leaders when they return to the workplace.

For example, when attending a Leading People class with a dozen learning objectives, a participant might discover some new tools for gaining group consensus and he knows these tools can be applied right away to make some decisions with his own team. Returning to work he excitedly shares these new ideas with his manager only to find that the manager really wanted him to learn how to facilitate the creation of a team vision. This was covered in class, but not knowing this was why he was selected to attend, he focused his attention on what he perceived to be an important skill.

Learning Objectives

Well-developed learning objectives are the foundation of a successful learning intervention. The learning objectives define the content, activities, and evaluation methods that are designed into the course. Effective learning objectives are active and measurable:

**Active**
The learning objective will define the action that the participant will be able to take. They are typically preceded by an action verb that is based on the level of cognitive learning desired. This is the single most important step in designing a course. Every minute of the course is designed to advance these objectives.

**Measurable**
Learning objectives should be measurable, meaning the training sponsor and the training provider will be able to gauge the effectiveness of the training in changing behavior to achieve results. There are four levels of learning:

- **Level 1: Reaction** - Participant satisfaction. Did they like the class?
- **Level 2: Learning** - The extent to which participants change attitudes, improve knowledge and/or increase skill as a result of the training.
- **Level 3: Behavior** - The extent to which behavior changed as a result of the training. Are they applying what they learned?
- **Level 4: Results** - The final results that occurred because the participants attended the training. What does it mean for the organization?

Bloom’s Taxonomy is a multi-tiered model of classifying learning according to six cognitive levels of complexity. Learning objectives should be developed to achieve a level of learning from Bloom’s Taxonomy. This insures that the appropriate number and level of activities are designed into the course and that the learning evaluation tool utilized accurately reflects results.

The Learning Impact Map (LIM)

A learning impact map is a very simple one-page document with four columns. The first, far left column and the last, far right column are completed before applying the tool. The two center columns are completed during application.
A learning impact map accelerates alignment of learning investment with organizational goals. This alignment is the catalyst for behavior changes that produce the desired results. A learning impact map will:

- Identify if the training can achieve the desired results in terms of broad business goals
- Prepare participants to learn and change their behavior based on the training
- Link the desired behavior with organizational performance and business goals

Learning impact maps can be created for a single individual, a team, or several job roles that may be attending training together. A well-written learning impact map always shows:

- Knowledge and skills the participant will learn in the training
- Behaviors driven by the new knowledge and skills
- Results that will be realized by the new behaviors
- Goals of the organization that the results will help accomplish

Applying learning impact maps is an elegantly simple process that includes roles and responsibilities before, during and after training. There are four key roles in the process:

- Participant: The individual who is the target of the learning intervention and the one expected to change behavior to produce a desired result.
- Manager: The participant’s immediate boss.
- Coordinator: The individual who is responsible for the success of the learning investment. They may also be the sponsor or funding source. Often this is someone on the organization's learning and development team, but may also be someone in a specific functional area of the business.
- Facilitator: The individual who delivers the training, often referred to as an instructor.

Using the Learning Impact Map in the Alignment Phase

The coordinator works with management and the facilitator to complete the first and last columns of the learning impact map. Learning investments are made to advance the success of the organization by advancing specific goals. The starting point for using the map is the last column on the far right, which identifies the organization's goals advanced by the learning objectives.

The learning objectives are described in the first column on the left. While the training may seek to fulfill many objectives, the key here is to focus on a few. Less is more. Three specific, active, measurable objectives is a practical number. This is completed in advance by the coordinator with input from the manager and facilitator.

The coordinator schedules time with the managers of the participants to describe the manager’s role and secure their commitment to fulfill it. During this scheduled time, the coordinator:

- Reviews the organizational goals
- Describes the training learning objectives
- Impresses on the manager how their engagement will impact the desired behavior change
- Demonstrates how to “read” the LIM
- Provides questions for the manager to use in the pre-training meetings with participants, including:
  - What are the business results you personally impact the most?
  - What are the key areas of training that can impact these results?
  - What are some actions you might take after training to reach these results?

Once prepared, the manager leads a meeting with the participant to complete the LIM. The meeting should be held three to seven days before the class. The meeting can be as short as 15 minutes and it may be conducted in person or on the telephone. The coordinator collects copies of the completed LIM for each participant and then delivers copies of the LIMs to the training facilitator.

Just as the 3A management process requires both an assessment of the current state and a description of the desired outcome, 3A Learning requires managers and employees to clearly define the desired outcome before the learning event takes place.
3A Learning - Assimilation Phase

During the learning event the focus is on assimilating the learning that resonates best with the participant. An effective learning event will engage them to apply what they already know in building relevant skills and knowledge that they can focus on and practice during the class. If these vital elements of an effective learning event are a part of the assimilation then the participant will return to work prepared to apply what they have learned. Otherwise, they may only have an awareness of and even a desire to apply these tools, but no practical experience on how to do it.

Participant-Centered Learning

Effective learning events should be designed to allow participants the opportunity to hear, see, question, discuss, do, and teach. The objective is for the participant to be actively engaged in doing something as part of the learning and retention strategy. This includes group discussion, presentations, simulations, and case studies or something other than passively listening to a lecture. People learn best when training modules are kept to 90 minutes, the pace is changed every 20 minutes and participants are involved every eight minutes. Participant-centered delivery increases retention and therefore potential for results.

Adult Learning

A successful learning event also recognizes that adults learn differently. Adults bring a wide range of knowledge, life experiences, interests and competencies to a learning experience and this diversity should be embraced in the development of education solutions. There are four principles of adult learning that should be incorporated into any active learning environment to help ensure knowledge transfer and retention:

- Prior Knowledge: Adults engage in learning with unique and often extensive prior knowledge that will aid or inhibit learning
- Relevance: Adults are ready to learn when they sense a need to cope with real life situations
- Active: Adults who test and apply new knowledge and skills in the learning environment are more likely to change their behavior on the job
- Self-Directed: Adults learn best when they take charge of their learning

Through adult learning, participants are encouraged to discover and learn by drawing on their own past experiences and existing knowledge. Students are more likely to discover new knowledge on their own as a result. Adult learning practices encourage active engagement, motivation, responsibility, creativity and a tailored learning experience.
Knowledge and skills are not the starting point! As illustrated here, the average retention from a lecture is only 5%. Retention increases with various delivery methods with the highest from the hands-on application of knowledge and skills, i.e. teaching others.

<table>
<thead>
<tr>
<th>Active Training Model</th>
<th>% of Retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>5%</td>
</tr>
<tr>
<td>Reading</td>
<td>10%</td>
</tr>
<tr>
<td>Audiovisual</td>
<td>20%</td>
</tr>
<tr>
<td>Demonstration</td>
<td>30%</td>
</tr>
<tr>
<td>Discussion</td>
<td>50%</td>
</tr>
<tr>
<td>Practice by doing</td>
<td>75%</td>
</tr>
<tr>
<td>Teaching others</td>
<td>90%</td>
</tr>
</tbody>
</table>

Facilitators Make the Difference

Whether assimilation happens effectively largely depends on who is leading your learning event. An instructor is a content resource, and usually shares knowledge through writing or lectures, appearing as a “sage on the stage.” A facilitator is a process manager first, a content resource second. Facilitators use their knowledge of how people learn to create an active environment that embraces participants’ prior knowledge and unique learning styles. When they facilitate, they appear as a “guide by the side,” with a passion for teaching that they have developed into a set of learning facilitation skills. Truly skilled teachers do both: instruct and facilitate learning.

The best facilitators should have completed a rigorous qualification process and are continuously engaged in activities that enhance their effectiveness at facilitating learning. This includes a rich repertoire of openers, closers, energizers, and interactive lecture techniques.

The competencies expected of a trained facilitator include:

- Prepares for training delivery by learning about the participants, knowing the material and creating relevant activities
- Creates a positive learning climate where learners feel safe and individual differences are respected
- Establishes credibility as a facilitator by fully understanding course content, answering questions and helping learners apply learning on the job
- Adapts teaching to what participants know and how they learn by using adult learning principles to enhance motivation and improve retention
- Remains focused on learning objectives by employing “parking lots” and adapting to difficult participants
- Facilitates learning by encouraging participation and adapting their style and activities to actively engage learners
- Employs a variety of teaching tools and techniques based on instructional expediency and uses facilitator materials with self assurance
- Ensures learning outcomes by integrating appropriate performance support and assessment techniques to ensure understanding and learning transfer

Using the Learning Impact Map in the Assimilation Phase

At the end of the training event, participants should define two to three goals they can achieve within 90 days after training. Early success is a key to sustaining the behavior change. Participants should share these goals and revisit the learning impact map as necessary based on what they learned in class.
Applying what one has learned is where 80% of learning takes place. It is using the skills and knowledge within the work environment that makes the learning stick, causing a behavior change that produces desired results. In this step it is important to experience early success. This early success depends on leadership support and coaching. If the training participant is left on his own, he is likely to discover unique factors in his work environment that make it difficult to apply what he has learned. The system, and often the people, resists change. Since learning is changing behavior, they will encounter resistance. They will need someone supporting them with encouragement, coaching, and running interference as they attempt to adapt their behavior.

Using Learning Impact Maps During the Application Phase

In the application phase, the manager and trainee have another meeting. They discuss the goals the participants determined in class and revise the LIM to reflect these goals and any new-found knowledge (things they “didn’t know they didn’t know” prior to class and therefore couldn’t have included in the original LIM). Now the employee is poised and ready to begin applying the lessons learned from the training into actions and results that directly align with organizational goals.

Follow Through

During the application phase, it’s important to have a disciplined method to monitor progress of goals set on the impact map and to help ensure success in 90 days. One solution is to use a follow-through tool supported by the Fort Hill company called ResultsEngine®. (www.forthillcompany.com)

This follow-through solution is a turn-key, web-based system. No special training, software, or equipment is needed. On selected dates after completing class, usually Fridays, participants are sent an email with a link to a customized Web site that has been pre-loaded with the goals they developed with their facilitator or coach. In about five minutes they update their progress, actions taken, next actions planned and the lessons they have learned. Follow-through supports the community of learners following class. The input and insight of every group member is visible to the others and includes a powerful feedback feature that allows participants to easily engage their manager or coach in their continued development.

Follow-through extends learning beyond the classroom by encouraging participants to take action, solicit feedback, and continue collaborative learning for up to three months post-program.

The follow-through process of action / reflection is repeated - typically five times over a 10-week period - to ensure that participants:
• Keep their goals at the top of their mind
• Celebrate success
• Plan and track progress
• Learn from others
• Receive coaching and mentoring
• Involve their managers
• Document results

Just as the 3A management process requires a follow-up step to review the outcome, the 3A Learning process requires managers and employees to evaluate the learning that has taken place, the progress of changing behavior and how the environment is adapting to change.

ResultsEngine® is a registered trademark of Fort Hill Company.
Training delivers maximum results when a class inspires retention, management is involved, a learning impact map is documented and a follow-through plan is in place. A high impact learning program can help you bring these elements together for an educational experience that changes behavior to achieve personal and organizational goals.

If you are planning to invest in education that produces results for your organization, look for training providers who embrace high impact learning principles, promote a learning process, and use qualified facilitators.

High Impact Learning can help those who are:

- Learning how to do their current job differently. They need to learn not only new knowledge, but new behaviors as well. Maybe their role has changed, or new processes need to be adopted.
- Moving into new positions or new areas of responsibility. They need to master new subject matter or get a refresher. They need to be able to apply new skills on the job.
- Moving into supervisory or management roles and need a wider perspective and new skills that will enable them to successfully lead people.
- Responsible for operations that rely on people improving their performance in line with business objectives.

Follow-through process
3A Learning - Success Story
National Frozen Dessert Manufacturer Employs Life Cycle Institute Learning Consultants to Improve Efficiency, Accuracy, Scheduling, Labor and Overhead

The Situation
A leading frozen dessert manufacturer operates a comprehensive maintenance planning and scheduling program that requires extensive coordination to achieve standardization and optimize production. Across their six production facilities they were dealing with the same maintenance planning and scheduling obstacles faced by many manufacturing organizations, including efficiency, accuracy of work orders, scheduling, labor utilization and cost reduction.

The Approach
The company recognized a need for specific, targeted training to improve their maintenance planning and scheduling program. They employed Life Cycle Institute to deliver a training class, followed by a High Impact Learning follow-through solution. This program extended learning beyond the classroom by encouraging participants to take action on specific and achievable goals, solicit feedback and continue collaborative learning through an online tool called ResultsEngine.

The Results
As a result of the combined training and follow-through program, participants transferred the classroom experience to their workplace with the following results:

- Participants applied what they learned. Valuable feedback and best practices were recorded in areas such as work orders, scheduling, equipment history, bill of materials, communication and backlog.
- Follow-through had impact on the job. Participants reported that follow-through results were immediate and far reaching.
- Managers saw a difference. Manager feedback was consistently positive and supportive.
- Participants valued the program and follow-through.

The Value of Follow-through
Follow-through proved invaluable in making sure that goals were achieved. This was not just another "check in the box" training, but a real, high-impact learning experience that produced results. As one participant shared:

"Of all of the professional development courses that I have taken this is the first one which has had the follow-through feature. This re-visiting of set goals is extremely important, enriches the whole process and made the experience very beneficial."

"The follow-through tool has been a great help. Also the ability to help build a network and the common approach provided by the course has helped greatly."
3A Learning - Success Story
Power Cooperative Utilizes Training, Coaching and Follow-through Tool to Improve Its Maintenance Planning and Scheduling Program

The Situation
One of the largest electric generation and transmission cooperatives in the United States was experiencing maintenance inefficiencies and low productivity, and often had trouble staying within their maintenance budget. This resulted in a failure to reach their goal of 85-100% (best in class) planned work. Site leadership approached Life Cycle Institute to provide a systematic approach that would help the work management team achieve these objectives.

The Approach
In an effort to overhaul their maintenance planning and scheduling program, the client scheduled a training class for several of their maintenance personnel, coupled with two weeks of follow-up coaching to help the participants put key concepts into practice.

The class facilitator worked with the plant superintendent prior to the training to align the course with the organization’s goals and objectives. Following the training, the Institute delivered two weeks of follow-up coaching coupled with a follow-through goals program. The facilitator helped the participants to draft specific, achievable goals to apply what they learned in class. They worked on these goals over the next 10 weeks, documenting their progress along the way. The goals ensured that learning would not stop with the classroom experience, but be transferred directly to the job.

To track the goals, the client utilized ResultsEngine®, an online tool which builds accountability for reaching goals by prompting participants to keep their goals top of mind and document their progress bi-weekly. The tool also enables them to request feedback on their progress from their manager and a coach, and get tips on overcoming obstacles along the way.

The Results
At the conclusion of the follow-through program the client realized significant gains in their maintenance planning and scheduling program.

- 10% backlog reduction over 10 weeks
- Greater collaboration between the planners and schedulers and the maintenance execution team
- Increased productivity and efficiency
- Higher percentage of planned work
- Measurable improvements in backlog management, work order detail, bill of materials accuracy and equipment history

Results were also seen on an individual level throughout the program.

- The follow-through program had a positive impact on participants’ effectiveness
- Participants were able to apply something they learned to their job
- Significant progress was made on 76% of goals

The Value of Follow-through
The combination of follow-up coaching and goal follow-through after the training program encouraged participants in the program to take action, solicit feedback and continue collaborative learning. The organization was able to capitalize on the learning application and ensure learning was retained far beyond the classroom experience.

"This program has forced me to follow through with a goal, i.e., stay focused and work hard to achieve that goal."
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