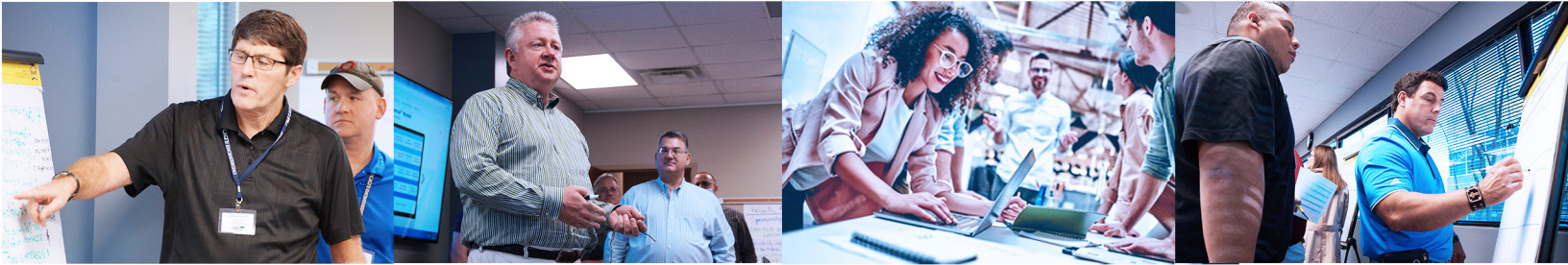# LIFE CYCLE INSTITUTE

LIFE CYCLE ENGINEERING • LIFE CYCLE ENGINEERING • LIFE CYCLE ENGINEERING

▶ HIGH IMPACT LEARNING

LEARNING IS CHANGE. CHANGE IS LEARNING®

Table of Contents

The Life Cycle Institute's mission is to deliver Learning, Leadership and Change Management solutions that help our clients develop into learning organizations with leaders as teachers, coaches and change agents.

Learning is Change. Change is Learning.®

"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.

ALIGN → ASSIMILATE → APPLY → RESULTS

Facilitating High Impact Learning using 3A Learning® Approach

We can better understand and facilitate High Impact Learning using an 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.

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.

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.

ALIGN > **ASSIMILATE** > **APPLY** > **RESULTS**

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:
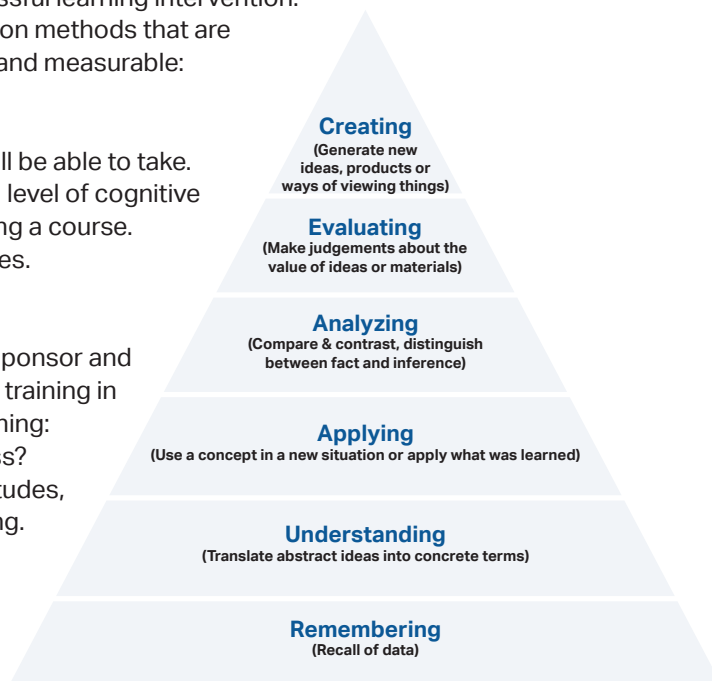
Active

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?

Creating
(Generate new ideas, products or ways of viewing things)

Evaluating
(Make judgements about the value of ideas or materials)

Analyzing
(Compare & contrast, distinguish between fact and inference)

Applying
(Use a concept in a new situation or apply what was learned)

Understanding
(Translate abstract ideas into concrete terms)

Remembering
(Recall of data)

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.

Learning Impact Maps

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.

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LEARNING IMPACT MAP

NAME: _____ DATE: _____

What will I learn?	What will I do with my learning?	What results will I get?	Organization Goals

The Learning Impact Map (LIM)
The 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.

Using the Learning Impact Map in the Alignment Phase (before training)
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.

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.

ALIGN → **ASSIMILATE** → APPLY → RESULTS

Participant-Centered Learning

Effective learning events should be designed to allow participants the opportunity to Hear, See, Question, Discuss, Do, 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.
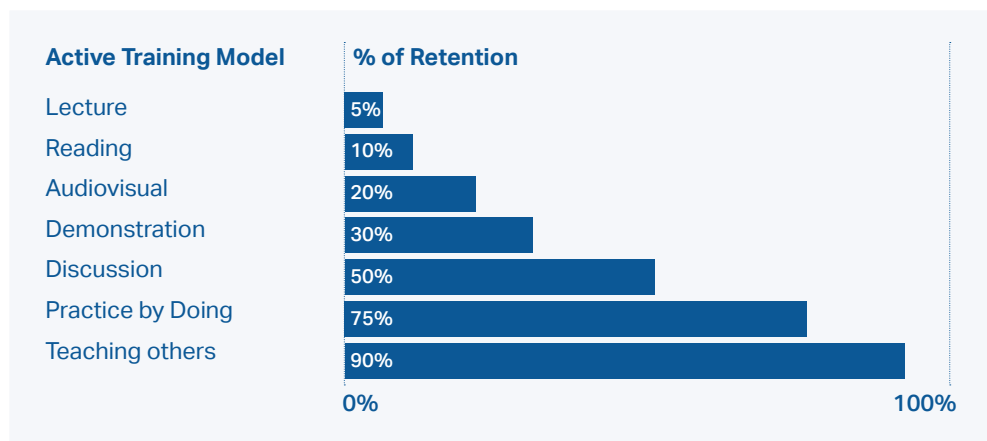
ACTIVE LEARNING

**What I Hear, I Forget
What I See, I Remember
What I Do, I Understand**

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

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.

Active Training Model	% of Retention
Lecture	5%
Reading	10%
Audiovisual	20%
Demonstration	30%
Discussion	50%
Practice by Doing	75%
Teaching others	90%

0% — 100%

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.

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

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FACILITATOR COMPETENCIES

	Key Action	Basic	Intermediate	Advanced
1.	Prepares for training delivery	Studies course materials with facilitator mentor and/or SME; practices using equipment; reviews participant info	Reviews course materials; adept at using equipment; understands participant needs; able to prepare and use relevant activities, examples & analogies	Knows course materials; expert at using equipment; understands all aspects of participants; creates relevant activities; examples & analogies in the moment; facilitates utilization of high impact learning plans
2.	Creates a positive learning climate	Creates a positive learning environment; models appropriate behavior; presents information logically; uses visual aids; manages time & group dynamics; facilitates individual action plans; demonstrates a sense of humor	Creates a positive learning environment in which learners can learn & practice; varies delivery style; presents information logically; intentionally provokes laughter; uses visual aids; uses daily openers, energizers, and closers	Creates a positive learning environment where learners feel safe & individual differences are respected; models behavior consistent with program goals; adapts facilitation style & curriculum to learner needs; presents information effectively; all activities are content related; ties individual action plans to high impact learning plan; practices CPR
3.	Establishes credibility as facilitator	Knows content & terminology; dresses professionally; applies sound presentation skills	Demonstrates knowledge of course content & terminology; answers learner questions; suggests how to apply learning on the job	Demonstrates full understanding of course content; uses terminology; provides relevant examples; responds appropriately to questions & objections; helps learners apply learning on the job
4.	Adapts teaching to what participants know and how they learn	Listens to & watches participants; adjusts instruction as possible	Monitors participants; assesses prior knowledge; adapts instruction in the moment to meet learner needs	Pre-analyzes the audience; monitors participants closely; is adept at adapting instruction in the moment to optimize prior knowledge and learning styles
5.	Focus on learning objectives	Informs learners of learning objectives; employs a "parking lot"	Ensures learners know and review learning objectives; adept at "parking lot"; recognizes and adapts to difficult participants	Ensures learners meet learning objectives; facilitates learning evaluations; expert at "parking lots"; applies strategies for managing difficult participants
6.	Facilitates learning by encouraging participation	Uses proven facilitation techniques to encourage participation	Adapts facilitation style to participants; engages learners; more facilitation than instruction	Adapts facilitation style & activities to actively engage learners; much more facilitation than instruction
7.	Employs a variety of teaching tools and techniques	Uses basic PowerPoint confidently; follows facilitator materials	Uses interactive lecture, simulations and case studies with little PowerPoint text; favors flipcharts over PowerPoint; follows facilitator materials with little reference to notes	Uses a variety of teaching techniques based on instructional expediency; avoids PowerPoint; uses facilitator materials with self-assurance
8.	Ensures learning outcomes	Checks learner understanding; completes end of class evaluation/self assessment	Checks learner understanding by integrating performance support & assessment techniques	Integrates appropriate performance support & assessment techniques to ensure learner understanding, skill/knowledge acquisition, future on-the-job application & intended business results; completes daily delivery self assessment

800-556-9589 education@LCE.com | www.LCE.com   **HIGH IMPACT LEARNING THAT PRODUCES RESULTS**

Using the Learning Impact Map in the Assimilation Phase

At the end of the training event, participants should define 2-3 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.

Application Phase

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, resist 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.

ALIGN ASSIMILATE APPLY RESULTS

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 ResulsEngine® (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.

Results

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. For an example of how the High Impact Learning process works, see the story on page 10.
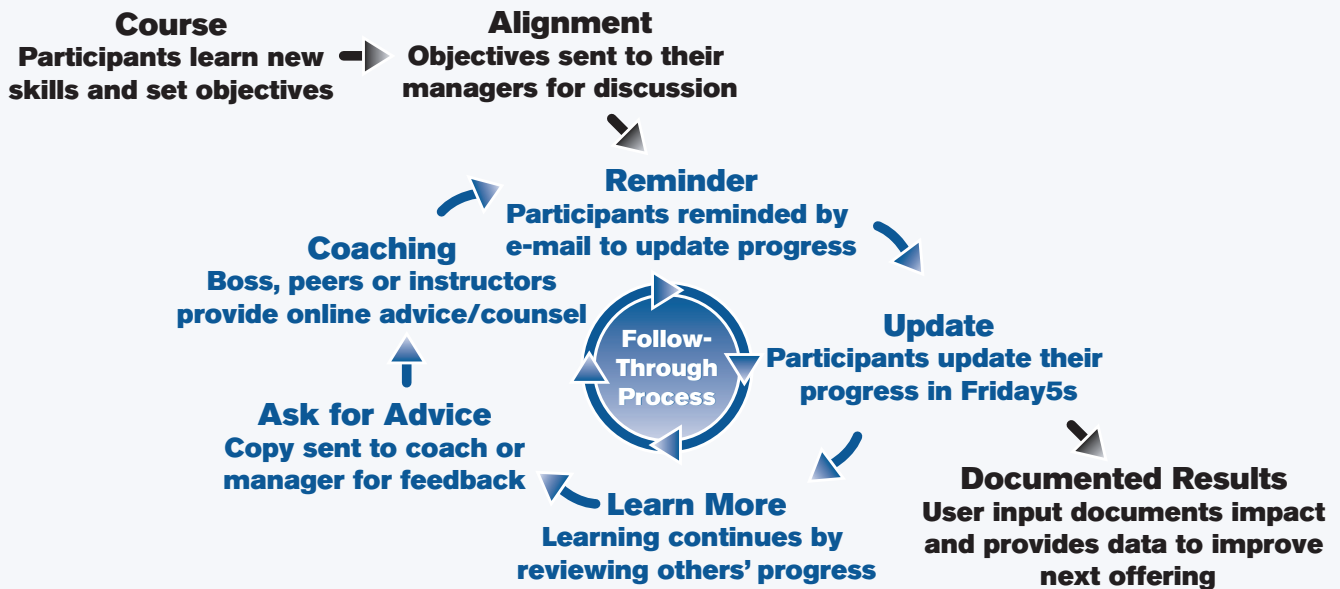
ALIGN ➤ **ASSIMILATE** ➤ **APPLY** ➤ **RESULTS**

High Impact Learning solutions 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.

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.

FOLLOW THROUGH PROCESS

Course
Participants learn new skills and set objectives

Alignment
Objectives sent to their managers for discussion

Reminder
Participants reminded by e-mail to update progress

Coaching
Boss, peers or instructors provide online advice/counsel

Follow-Through Process

Update
Participants update their progress in Friday5s

Ask for Advice
Copy sent to coach or manager for feedback

Learn More
Learning continues by reviewing others' progress

Documented Results
User input documents impact and provides data to improve next offering

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's Operations Manager acknowledged that there was a need for specific, targeted training to improve their maintenance planning and scheduling program. They employed the Life Cycle Institute to deliver a Maintenance Planning and Scheduling class at their headquarters. Recognizing that the classroom was only the start of an effective learning program, a High Impact Learning follow-through solution (ResultsEngine®) was included to extend learning beyond the classroom by encouraging participants to take action on specific and achievable goals, solicit feedback and continue collaborative learning.

The Institute course facilitator worked with individual participants during class to develop two clear and meaningful goals to follow-through on their learning experience. These goals were directly linked to course learning objectives and to each participant's understanding of where they needed to focus their attention and newly acquired knowledge at their respective production facilities. An online tool called ResultsEngine was used to track each participant's goals and progress.

ResultsEngine reminds participants every two weeks of their goals while prompting them to create updates on progress made. Individual input on goals and progress is solicited every other Friday for 10 weeks and in about five minutes participants are able to update their progress, actions taken, next actions planned and lessons learned. Participants are also encouraged to request feedback on those goals through coaching and mentoring.

- **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.**
  - "Assignments were made to begin adding work order numbers to part check-out sheets to capture parts/work order information and parts personnel were successfully trained on how to attach work order numbers to parts when checked-out."
  - "I am now implementing new schedule predictives as history is collected."

- **Follow-Through had impact on the job. Participants reported that follow-through results were immediate and far reaching.**
  - "It gave my planner and me the ability to align on what was important to take the next steps to actually producing a maintenance schedule and how to work towards it. It also built a network of contacts for me that can help us when we hit a stumbling block."
  - "I was able to visualize the overall process needed to successfully plan and schedule our maintenance resources."

- **Managers saw a difference. Manager feedback was consistently positive and supportive.**
  - "You are doing a great job initiating predictive schedules, keep moving forward on this."
  - "These are some great goals. My advice to you is work closely with your Planner, so he can get you any information that will help you."

- **Participants valued the program and follow-through.**
  - "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."
  - "The constant reminder makes you reflect on the ultimate goals for the organization. Being able to tie my activities to a goal is pretty neat."

The Results

As a result of selecting a private Maintenance Planning and Scheduling class combined with High Impact Learning follow-through, participants transferred that classroom experience to their workplace with the following results:

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."

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 Engineering (LCE) to provide a systematic approach that would help the work management team achieve these objectives. Since maintenance supervisors play a critical role in the execution of the scheduled work, the client understood that their active involvement would be needed to sustain this program. The organization was falling short in providing a standardized program that would facilitate communication between maintenance management, planners, schedulers and supervisors.

The Approach

The plant superintendent at the company's primary facility decided that their maintenance planning and scheduling program needed an overhaul. The client scheduled a Maintenance Planning and Scheduling class to be held at their facility for several of their maintenance personnel, coupled with two weeks of follow-up coaching to help the participants put key concepts into practice.

The Life Cycle Institute's class facilitator worked with the plant superintendent prior to the training to ensure the course was aligned with the organization's goals and objectives. The facilitator was then able to focus the course on areas most beneficial to the class participants and the organization.

Following the training, LCE delivered two weeks of follow-up coaching coupled with a follow-through goals program. During the first coaching visit, the facilitator worked with 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 a program offered by the Life Cycle Institute, called ResultsEngine®. ResultsEngine is 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. The client started with an enormous backlog, which was intimidating for their maintenance personnel to tackle. During the follow-through phase many committed to reducing this backlog, resulting in at least a 10% backlog reduction over 10 weeks.

The ResultsEngine follow-through program is designed to:
- Transfer learning to the workplace
- Demonstrate the value of accountability
- Build a support network with manager & coach

Collaboration between the planners and schedulers and the maintenance execution team was weak at the start of the program. Individuals made deliberate efforts to strengthen this partnership and better understand the other's role in the maintenance program. Productivity and efficiency increased as a result. The percentage of planned work has increased as a result of the program, and areas such as backlog management, work order detail, bill of materials accuracy and equipment history also improved.

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

- **90% reported that the follow-through program had a positive impact on their effectiveness**
  "I have learned to prioritize my work more efficiently and effectively in the last 10 weeks. Keeping a diary of my day to day progress aids in being a more effective planner. It also allows me to go back and check where I've been and where I need to go."

- **92% were able to apply something they learned to their job**
  "I removed all duplicate work orders off of backlog. I also went through backlog and got a lot that were completed signed off. I feel I have met my goal of decreasing backlog by 10%."

- **76% of total goals entered showed at least significant progress by the final update**
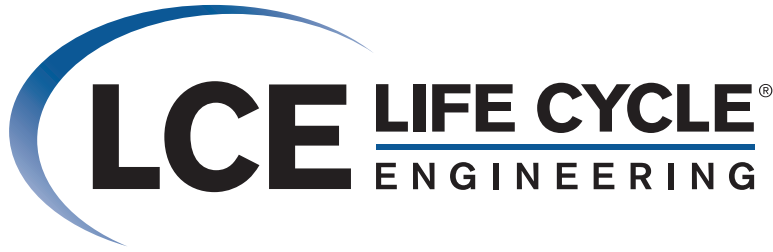
The Value of Follow Through

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."

About Life Cycle Engineering

More than 2,000 clients have leveraged the knowledge and experience of LCE's subject matter experts to improve economic performance of their asset-intensive manufacturing and processing plants, mining operations, energy generation plants, and education and health care facilities. The culmination of 40 years of application, more than 500 years of combined subject matter expert experience, and thousands of successful implementations in government and the private sector uniquely positions LCE as a leader in performance improvement. LCE's proprietary, holistic, data-driven approach enables clients to achieve leadership positions in their core businesses, leverage their core strengths to grow adjacent opportunities, and operate at superior performance levels that drive industry-leading results.

Life Cycle Engineering (LCE) was founded in 1976 by two civil service engineers working for the government in Washington, DC. They worked directly with the United States Navy to pioneer the application of reliability engineering – and specifically predictive technologies and condition monitoring – to be used in nuclear submarines. That led to larger questions about how they could monitor and extend the reliability of additional Navy systems, particularly the mechanical and electrical systems, during their entire life cycle.

Today, LCE is a privately held company with headquarters in Charleston, South Carolina, providing engineering solutions for private industry, public entities, government organizations and the military, in North America and around the world.

LCE's Reliability Consulting Group provides consulting, services and education that help organizations reduce risk, improve operating performance and engage their employees. LCE's reliability team is a talented, diverse group successfully managing multiple, complex projects simultaneously… around the globe. Our team includes subject matter experts in a variety of disciplines from reliability engineering to planning and scheduling to lean / Six Sigma.

All of our consultants hold an advanced degree or an accreditation within their profession and are certified Prosci ® Change Management Professionals.

Life Cycle Institute is LCE's human performance practice that integrates learning, change management and project management. The Institute offers 22 courses attended by more than 1200 students from more than 200 companies each year. In addition to individual courses, Life Cycle Institute offers university-backed certification programs in Reliability Engineering and Maintenance Management. Our university partners include Clemson University, The Ohio State University, University of Kansas and Washington State University.