



## Using LTL with Future and Incumbent Workers

### ABSTRACT

Groups studied: 200 LTL trainees; 200 controls not receiving LTL

1. Before LTL training: Both groups had equivalent work behavior scores, and both groups had received training in quality circles and quality techniques.
2. After LTL training: In both plants, LTL participants' work behaviors were better than control groups' on each of the eleven dimensions of work behavior measured.
3. In both plants, LTL participants' work behaviors were significantly better than the control groups' on the skills directly related to quality circles and use of quality techniques.<sup>2</sup> These skills include:
  - Creating systems for monitoring his/her own and others' work.
  - Revising workplace materials that are confusing or ineffective.
  - Identifying problems in quality or production.

Conclusion LTL results in strong, significant, and long-term<sup>3</sup> improvements in workers' ability to benefit from quality techniques and use them on the job.

### Introduction

The Learning to Learn system is designed to teach people strategies of questioning the world around them. It is designed to help employees think more actively and effectively and to help them develop a consistent and creative approach to problem solving on the job. LTL is intended to teach people how to think independently and systematically using a coherent system of generating questions, breaking up complicated tasks and ideas into manageable parts, setting short-term learning goals, and looking for feedback to monitor their own performance.

Motorola, Inc. conducted a 13-week LTL course for 200 workers at two sites: Mt. Pleasant, Iowa and Mesa, Arizona. Motorola staff initiated a comprehensive evaluation of LTL. This evaluation report, prepared externally by Evaluation Consultants for Motorola, is submitted in response to that need.

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<sup>1</sup> Prepared for Motorola by Evaluation Consultants

<sup>2</sup> The section relating to quality is called "Monitoring Skills." Statistical significance:  $p < .01$  at Motorola plant in Iowa,  $p < .05$  at Motorola plant in Arizona

<sup>3</sup> The changes produced by LTL were long-lasting: The post-measurement was conducted several months after the LTL course.

**Behavior**

Learning new skills is no guarantee that they are transferred on the job. This evaluation is designed to determine whether participants apply what they have learned.

The following guidelines were used for measuring the amount of behavior change that took place among participants as a result of the Learning to Learn training program.

1. On-the-job performance should be appraised before and after the training.
2. Performance appraisal should be made by one or more of the following groups: a.) the participant. b.) the participant’s supervisor, c.) a colleague or peer, and d.) subordinates.
3. A statistical analysis should be conducted to compare performance before and after the training program to relate changes to the training program.
4. The post training appraisal should be made several months or more after the training so that participants have an opportunity to practice what they have learned, and to assess long-term behavior change.
5. A control group should be used.

**Description of the Behavior Change Instrument<sup>4</sup>**

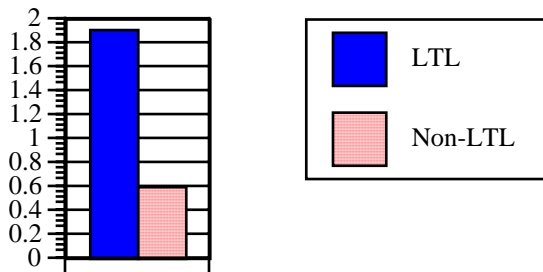
The instrument used to assess behavior was developed by Clark Wilson, Inc. and was based on LTL experiences at Kodak. The Wilson instrument was selected by the American Society for Training and Development for use in evaluating LTL at various test sites. Wilson provided Evaluation Consultants with the results of a factor analysis that they had performed on their instrument. This factor analysis was used to identify the components or factors of the instrument. The following factors were identified:

- |   |                     |                   |
|---|---------------------|-------------------|
| Learning Readiness                              | Orderliness         | Analytical Skills |
| Responsiveness (Ongoing use of feedback skills) | Attention to Detail | Problem Solving   |
| Personal Competence                             | Accessibility       | Monitoring Skills |
|   | Effectiveness       | Goal Orientation  |

Supervisors were asked to describe each participant by indicating their agreement/disagreement with a series of statements.

**Iowa Supervisors:**

**Summary of Work Behavior Scores several months after the LTL course**

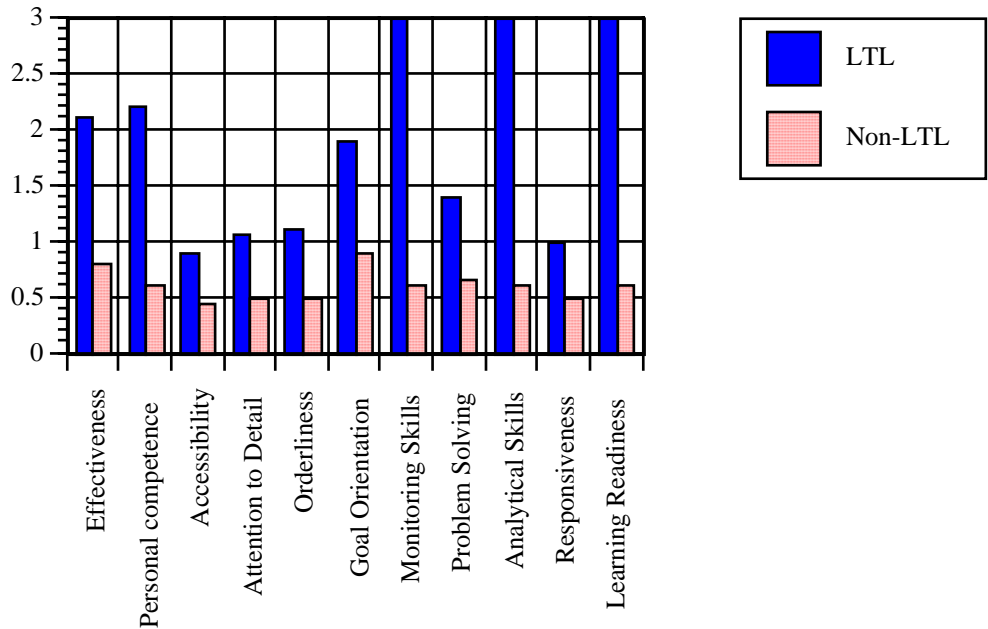


This chart summarizes after-LTL differences between the mean scores on all eleven dimensions of behavior measured. (Before LTL training, both groups had equivalent scores, and had received training in quality circles and quality techniques.)

<sup>4</sup> See Behavior Change Instrument on pp. 4-5.

**Iowa Supervisors:**

**Work Behavior Sub-Scale Scores several months after the LTL course**

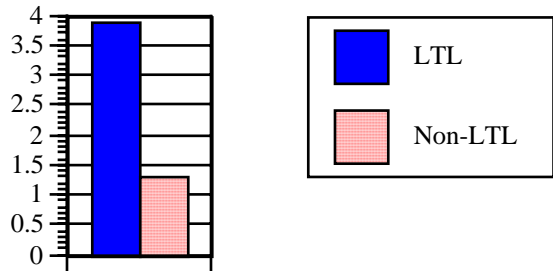


**Summary statements**

- Supervisors' assessments of LTL participants' behavior were more positive than their assessments of the control group's on each of the eleven dimensions of behavior measured.
- The perceived changes in behavior for the participants were in a positive direction for all of the dimensions of behavior measured.
- The change in the supervisors' assessments of the LTL participants' behavior was significantly greater ( $p < .05$ ) than the control group's on the Learning Readiness, Responsiveness to Feedback, Analytical Skills, Problem Solving, Goal Orientation, Accessibility, Personal Competence, and Effectiveness sub-scales.
- The change in the supervisors' assessments of the LTL participants' behavior was significantly greater ( $p < .01$ ) than the control group's on the Monitoring Skills and Orderliness sub-scales.

**Arizona Supervisors:**

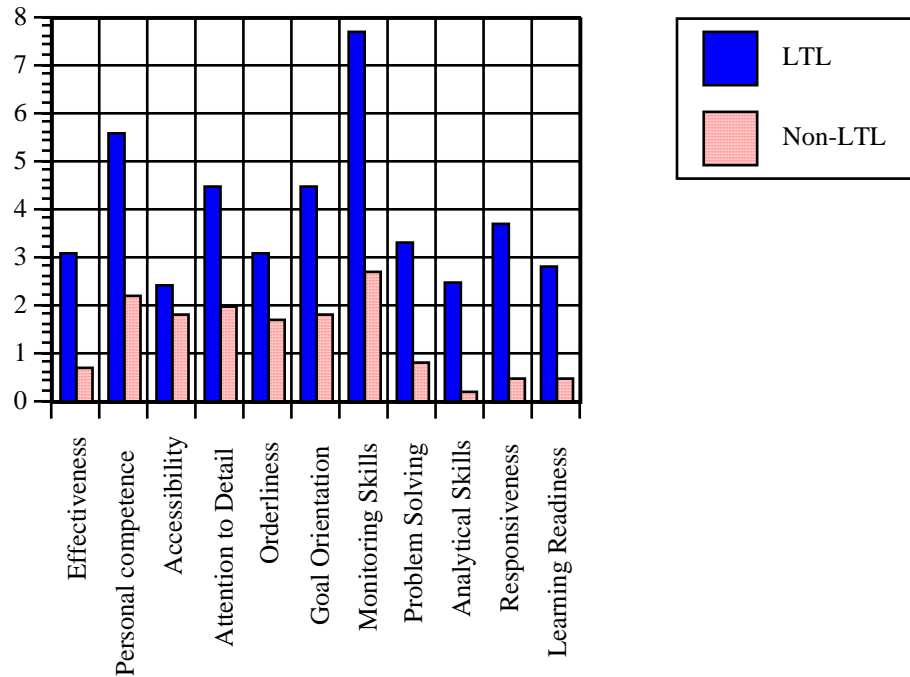
**Summary of Work Behavior Scores several months after the LTL course**



This chart summarizes after-LTL differences between the mean scores on all eleven dimensions of behavior measured. (Before LTL training, both groups had equivalent scores, and had received training in quality circles and quality techniques.)

**Arizona Supervisors:**

**Work Behavior Sub-Scale Scores several months after the LTL course**



### Summary statements

1. Supervisors' assessments of LTL participants' behavior were more positive than their assessments of the control group's on each of the eleven dimensions of behavior measured.
2. For all but one dimension (Orderliness), the perceived changes in behavior for the participants were in a positive direction.
3. The change in the supervisors' assessments of the LTL participants' behavior was significantly greater ( $p < .05$ ) than the control group's on the Monitoring Skills sub-scales.

## Behavior Change Instrument<sup>5</sup>

### A. Learning Readiness

- 40. Feels comfortable learning new things
- 47. Is an avid learner.
- 50. Understands the implications of new information as well as explanations.
- 58. Asks relevant questions that show active involvement in discussion or training.
- 59. Picks up new information and puts it to work on the job.

### B. Responsiveness (Ongoing use of feedback)

- 48. Clearly indicates when he/she understands an explanation by feeding it back.
- 49. Listens attentively when something is explained.
- 61. Demonstrates learning by giving clear feedback.

### C. Analytical Skills

- 35. Understands the terminology of the field.
- 36. Appropriately uses the terminology of the field.
- 42. Breaks up complex tasks/concepts into manageable parts.
- 43. Raises questions looking for information to clarify his/her understanding.
- 55. Shows a clear understanding of the pros and cons of a suggestion or proposal.
- 56. Expresses questions in a clear manner.
- 62. Relates new ideas to old to give structure to concepts.

### D. Problem Solving Skills

- 2. Finds ways to solve problems.
- 6. Contributes to ideas which are practical as well as technically sound.
- 9. Knows how to get things done or figures out how to do them.
- 23. Handles problems easily.
- 34. Actively seeks solutions to problems.
- 39. Sees relationships between new information and what he/she already knows.
- 46. Is able to apply new information on the job.

### E. Monitoring Skills

- 30. Creates systems for monitoring his/her own and others' work.
- 31. Revises workplace materials that are confusing or ineffective.
- 33. Identifies problems in quality or production.

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<sup>5</sup> For the benefit of the reader of this report, items on the instrument are arranged here according to the categories in the factor analysis of the instrument. When presented to the supervisors, items on the instrument were arranged according to the numbers shown next to each item. (e.g., Item "40." under Learning Readiness, "I feel comfortable learning new things," was the 40th item on the instrument presented to supervisors; the first item on the instrument presented to supervisors was "1." under Goal Orientation here, "I understand the group goals and work to meet them. ")

F. Goal Orientation

- 1. Understands the group goals and works to meet them.
- 8. Attends to the job at hand and keeps at it.
- 38. Understands what is important.

G. Orderliness

- 45. Schedules times to meet deadlines
- 52. Approaches work in an orderly fashion.
- 57. Organizes time well.

H. Attention to Detail

- 7. Is very much concerned about the quality of his/her work.
- 10. Tries hard to get things right the first time.
- 24. Is strict about checking details. (Pays attention.)
- 44. Catches and corrects his/her own errors.

I. Accessibility

- 17. Is open to candid feedback.
- 18. Profits by candid feedback.
- 20. Readily accepts suggestions from other people.
- 21. Puts suggestions to good use.

J. Personal competence

- 15. Is competent in the technical and functional aspects of his/her work.
- 16. Is a good internal resource, and lends a hand to help other people and units.
- 19. Not only does the right things but does the right things well.
- 22. Achieves a lot in a short time.

K. Effectiveness

- 4. Gets things done well and on time.
- 28. Is well motivated.
- 29. Volunteers for more challenging assignments.
- 37. Contributes ideas at meetings.
- 53. Freely enters into class or group discussions.
- 54. Can explain tasks and methods to others in the work group.

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<http://www.learning-resources.com/library/UsingLTLwithFutureandIncumbentWorkers.pdf>