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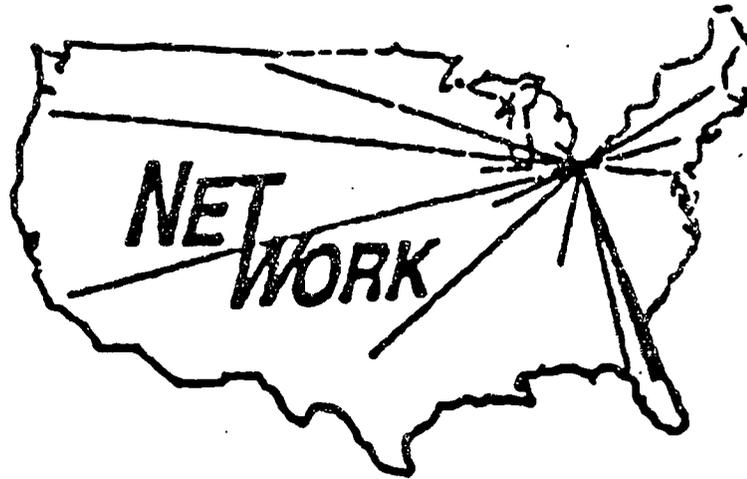
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ABSTRACT

Early in 1991, a partnership project was initiated between the Business/Industry Training Institute of Northwest Iowa Community College and Coilcraft, Inc. The Iowa Coilcraft plant had undergone rapid changes in recent years from a labor-intensive, custom-built, manual, task-oriented process to a highly automated, training-intensive, machine-oriented process. Instead of training on the floor, employees must now receive several days of classroom-style training before they are even allowed into production. In June 1992, approximately 27% of the Coilcraft workforce tested below 8th grade in reading and 30% tested below 8th grade in math. As a result, a \$303,000 National Workplace Literacy grant was sought and obtained. The program sought to establish a literacy program for 160 to 300 workers; prepare a minimum of 160 workers to use new technology and operating methods; and encourage 160 workers to continue participating in training needed to be competitive in the labor market. Following a 12-week start-up phase, three successive training blocks of 15 weeks each were offered, providing reading, math, and writing classes during normal work hours for each shift of work. Since the blocks were successive, a worker could finish all subjects as needed. Outcomes of the project include: (1) 419 workers were assessed and given individual development plans; (2) 142 completed literacy training; (3) 119 completed basic team skills training; (4) 18 completed leadership/facilitator skills training; and (5) 14 workers completed 64 general education diploma tests. (KP)

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A Workplace Skill Building Project

by

***Robert De Zeeuw,
Northwest Iowa Community College***

and

***Jerry Klemme,
Coilcraft, Incorporated***

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A WORKPLACE SKILL BUILDING PROJECT

by

**Robert De Zeeuw, NCC
Jerry Klemme, Coilcraft**

Introduction

Basic Skills in the Workplace

This presentation will cover a partnership project between the Business/Industry Training Institute of Northwest Iowa Community College of Sheldon, Iowa, and Coilcraft, Inc. of Hawarden, Iowa.

This project was incubated in early 1991 through an Iowa Developmental Grant which then expanded into a Workplace Skill Building Project funded in early 1993 by the National Workplace Literacy Program.

Who will benefit from this presentation!!

- Economic Development - Grant writers working with Business/Industry
- Industry Management - Company CEO executives, manager
Looking for ways to increase improved production, quality & staff.
- Business/Industry Education - Those in education whose function requires assisting Business/Industry.
- Literacy Teachers - Teachers, instructors in basic skills.
(also instruction in TQM, Team Building, Problem Solving)
- College Administration - College President, managers looking for partnership projects with industry.
- Human Resources - Business/Industry H.R. staff seeking ways to improve production, quality & staff.
- Industry Trainers - Business/Industry H.R. staff seeking ways to improve production, quality & staff.

Key Points of the Presentation

The key points covered in this presentation will describe the need for the workplace (Coilcraft, Inc. of Hawarden) to change due to changing technology and market shifts in demand for products. An evaluation of the workplace literacy skills demonstrated a need for a Workplace Skill Building Project which was initiated in 1993. The goals of the project were to establish a workplace literacy program that would attract and enroll workers, prepare them for making use of new technology and operating methods, and encourage them to continue to participate. The project would span 18 months time, in which the first three months would be developmental and the last 15 months, skill training. Training outcomes and product/quality outcomes would be monitored throughout the project.

Why is Workplace Skill Building Important?

The National Adult Literacy Survey (NALS) also verifies the need for Workplace Skill Building as evidenced by a recent survey. Survey results identified 21 - 23 % adults (41 - 44 million) demonstrated skills in the lowest level -- Level 1. Of these, 25% were immigrants and 62% had terminated before completing high school. Over 50 million (25 - 28 %) adults tested at Level 2 -- limited skills. Those in Level 1 & 2 require higher level reading and problem solving skills according to the survey.

Company Profile

Coilcraft has been in business since 1948 and is one of 10 Coilcraft plants. These plants are dispersed throughout the U.S. and 6 foreign countries. Coilcraft, Inc., has approximately 400 employees at the Hawarden, Iowa, plant where this project has evolved. Over 90% are hourly employees. The product line is primarily miniature coils called chip inductors. These components are utilized in radio, telephones, pagers, & some industrial equipment. The Hawarden plant is the primary U.S. manufacturing facility.

Workplace Need for Change

The Iowa Coilcraft plant has undergone rapid changes in recent years. The primary product line has switched from a labor-intensive, custom-built, manual, task-oriented process to a highly automated, training intensive, machine-oriented process. We used to train a new employee for a specific task and expected at least a fundamental performance in a matter of hours. Now, training is progressive; that is, higher level operations require accomplishment at the lower levels. in appropriate sequence. We train classroom style for several days or more before even allowing a new employee into production.

Needs for the "New" Workplace

Quality requirements are so demanding and the machinery operates so fast that anything less than full competence can produce thousands of dollars of scrap before being caught. In today's market many customers do not use traditional incoming quality inspection to confirm our quality. Instead, we are pre-qualified as an approved vendor and our product will be installed in many radios before a problem is exposed. Our customers may even hold us liable for costs of repairs. Quality control does not just extend to the obvious inspection attributes of our parts. We can have an equally embarrassing and costly problem if the person who simply applies the label to the reel accidentally sticks it on the wrong one. This actually happened most recently in our home office. It was a very expensive label! Thus training and procedure is important throughout the entire system. Our earlier reliance on a few skilled individuals exposed many weaknesses as our growth required us to bring in both new hires and existing employees accustomed to a traditional environment.

Pre-Workplace Skill Building Project History

In view of the workplace change occurring at Coilcraft of Hawarden, a partnership project was initiated with Northwest Iowa Community College's Business & Industry Training Institute. The project, funded in part with an Iowa Development grant provided a vehicle to review changing production job competencies through an in-depth task analysis. At that time, job competencies, study guides, manuals, training videos, training instruments and evaluation tools were developed for major production job categories.

Over this period, rejection rates were reduced to a fraction of former levels. At this time, it was evident there was a need for basic workplace skills such as math, reading, and writing, along with team building/problem solving skills.

Need for Workplace Skills Improvement

In June of 1992, a sample of the workforce (10%) indicated 27% tested below 8th grade in reading and 30% tested below 8th grade in math. The Taber test instrument was utilized. A company survey indicated 43 of 93 (46%) of recent applicants had not attained high school education. Also, rapid change and technological advances at Coilcraft were changing the skill requirements for the workplace.

As a result, a grant application was submitted to the U.S. Dept. of Education for a National Workplace Literacy Grant. The grant was awarded in March of 1993 for the amount of \$303,000.

General Goals

Start-Up Phase

- #1 To establish a workplace literacy program that will attract workers and enroll 160-300 workers.
- #2 To establish a workplace literacy program that prepares a minimum of 160 workers for making use of new technology and operating methods.
- #3 To establish a workplace literacy program that encourages 160 workers to continue participating in training needed to be competitive in the labor market.

Evaluation

- #1 To recruit and enroll 160 workers who need improvement in their basic workplace skills and to develop Individual Development Plans.
- #2 To provide individualized job-related basic skills instructions at convenient locations, on a flexible schedule, and to provide the supportive services necessary to assure participant success.
- #3 To encourage workers to continue their education so they are prepared to adapt to new changes in technology or operating methods.

Start-up Activities & Outcomes

The start-up phase required a number of activities to insure a strong buy-in into a voluntary program. Initially a promotional brief was developed which was made available to every employee. The brochure provided answers and an overview of the program. The brief provided answers to questions such as, "What is Workplace Skill Building?", "How will this project benefit you?", and "What will this project provide?"

Other activities involved one-on-one sessions with the production staff and proper counselors, meeting with management and supervisory staff to explain the program. Staff were asked for their input on development of the curriculum.

During this time, strong support was achieved for both management and labor. At the end of the start-up phase, over 160 workers indicated a commitment on their Individual Development Plans.

Pre-Assessment Results

The initial pre-assessment was mandatory for all workforce employees. The Tape Survey Form, Level M, was utilized. There were 243 workers assessed at an average age of 37, of which 91 were male and 152 female. These test results indicated that 17.6 tested below 8th grade in reading, 34% in math, and 40% in writing.

Functional Flow

Start-up phase of the grant project was set at 12 weeks. This time was for start-up activities, hire staff and develop the curriculum. The operating phase was primarily set up in 3 successive training blocks of 15 weeks each. During each block, reading, math, and writing were offered to the workforce during normal work hours for each shift of work. Employees were not allowed to participate in more than one class offering at a time. Since there were 3 successive blocks, a worker could finish reading, math & writing as needed.

Class Completion Summary

A total of 142 separate employees participated and completed basic skills courses. Total courses completed in each category were: 58 -reading, 88 - math, and 71 - writing. There were 10 workers that duplicated a given course for a total of 227 course completions. The number of workers that actually started training in all blocks were 340. The large drop-out rate experienced was due to employees quitting work, pregnancy, lack of interest, workload and other miscellaneous reasons.

Evaluation Summary

Grade improvement varied from block to block; however, the summary showed an average grade change in reading of 1.1, math - 1.1, and writing - 1.4.

Training Outcomes

- 419 Workers assessed and Individual Development Plans developed.
- 142 Workers completing literacy training (340 workers participated with 227 course completions).
- 119 Workers completed Basic Team Skills.
- 18 Workers completed Leadership/Facilitator Skills.
- 14 Workers completed 64 GED tests (8 completed all 5 areas)

To demonstrate the success of an intensive, coordinated training program in our plant, we can look at some of the recent history of our growth and our corresponding progress. Because our company operates in an extremely competitive market, we do not indicate actual productivity or cost information on these graphs, but they do indicate the dramatic changes that we have seen.

Equipment graph

We had a corresponding increase in the production equipment which also taxed our ability to hire and train mechanical and technical staff at the same time. Understand that all of Coilcraft's equipment is designed and built in-house, thus during a period of process development we are using prototypes or prototype clones which do not come with instruction manuals or troubleshooting guides.

Employment graph

When the television industry moved offshore about 1970, our employment dropped from approximately 1000 in our 20-mile "campus" to about 100 or so for over 15 years. We have more than doubled in the last 3 years alone. While the total numbers aren't terribly large, the relative growth could have overwhelmed us, especially since the product line was undergoing conversion and process development at the same time.

Production graph

Production at our plant increased dramatically in the past couple of years. At the same time (Labor-per-unit graph) the efficiency of the labor costs dropped. Also, we were given compliments from one of our major customers for our ability to support their increasing demands and still maintain our high quality level.

Labor/Unit graph

Labor content of our product has continued to be reduced, and this is especially significant because it was done during the sharp increase in employment and while we also took valuable production time for classroom training.

BASIC SKILLS IN THE WORKPLACE

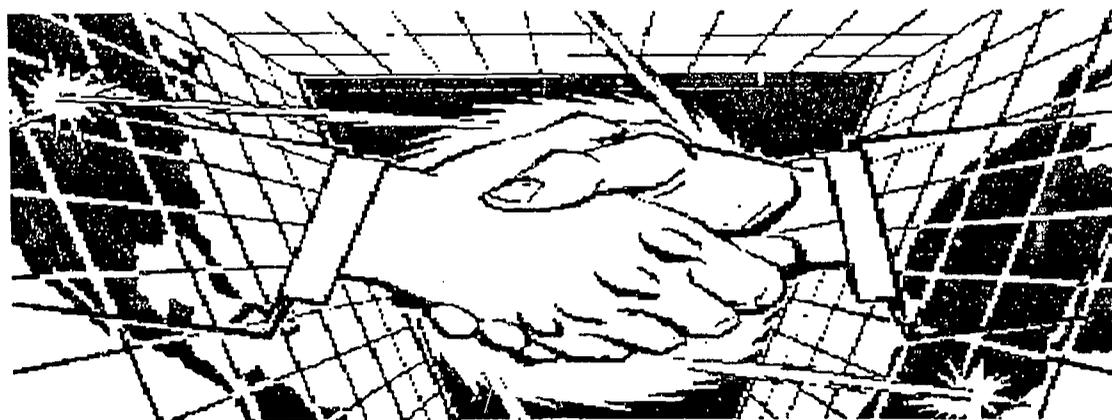
*A Partnership Project
of
National Workplace Literacy Program*

between

*Business/Industry Training Institute
of*
**NORTHWEST IOWA COMMUNITY
COLLEGE**

and

COILCRAFT, INC.
of Hawarden, Iowa



WHO WILL BENEFIT FROM THIS PRESENTATION!!

- Economic Development
- Industry Management
- Business/Industry Education
- Literacy Teachers
- College Administration
- Human Resources
- Industry Trainers

KEY POINTS of Presentation

- Workplace's Need for Change!!
- Evaluation of Workplace Literacy Skills
- Workplace Skill Building Project Goals
- Function Flow of Project
- Training Outcomes
- Production/Quality Outcomes

WHY IS WORKPLACE SKILL BUILDING IMPORTANT?

Based on the *NATIONAL ADULT LITERACY SURVEY (NALS)*

- 21 - 23 % Adults (41 - 44 million) demonstrated skills in lowest -- Level 1
 - 25 % - Immigrants
 - 62 % - Terminated before completing high school
- 25 - 28 % Adults (50 million) tested at Level 2 - Limited Skills
- * Level 1 & 2 respondents -- those requiring higher level reading & problem solving skills.

PROFILE
of
COILCRAFT, INC.
HAWARDEN, IA

- Coilcraft's been in business since 1948
- One of 10 Coilcraft plants
- Dispersed throughout U.S. and 6 foreign countries
- Coilcraft, Inc. has approximately 400 employees at the Iowa plant
- Over 90% are hourly employees
- Product --- miniature coils (chip inductors)
- Used by other industries in radio, telephones, & pagers
- Primary U.S. manufacturing facility

WORKPLACE NEED FOR CHANGE

PRODUCT LINE

- Labor intensive
- Custom built
- Manual labor
- Task Orientated



- Highly Automated
- Training Intensive
- Machine-Orientated Process

NEEDS FOR “THE NEW” WORKPLACE

- Improved Quality
- Lower Production Cost
- A Higher Level Thinking Workforce
- Structured Training
- Team-Orientated Culture

PRE-WORKPLACE SKILL BUILDING PROJECT HISTORY

- June 1991 -- Coilcraft, Inc. launched development of a two year training program with Northwest Iowa Community College.
- Job competencies & training curricula were developed for production jobs.
- Product rejection rates were reduced to a fraction of former levels.

NEED FOR WORKPLACE SKILLS IMPROVEMENT

- 1991-92 - Evidence of workers' skills falling behind technology.
- June 1992 - Sample testing indicates workforce needs training.
 - 27% tested below 8th grade reading
 - 30% tested below 8th grade math
- Rapid technological advances are changing skill requirements for workplace.
- Company survey indicated 43 of 93 (46%) recent applicants had not attained high school education.
- July 1992 - submitted application to U.S. Dept. of Education for National Workplace Literacy Grant
- March 1993 - Awarded grant - \$303,000

GENERAL GOALS

START-UP (Phase I)

To establish a workplace literacy program that will:

- attract and enroll 160 - 300 workers.
- prepare workers for making use of new technology & operating methods
- encourage 160 workers to continue participating in training needed to be competitive in the labor market.

OPERATION - Evaluation (Phase II)

- To recruit and enroll 160 workers who need their basic skills.
- To provide individualized, job-related basic skill instruction.
- To encourage workers to continue their education.

START-UP ACTIVITIES & OUTCOMES

- Promotional brochure
- Counselor interaction with workforce
- Workforce input into curriculum development
- Support for management (cooperation & financial)
- Support for labor (release time)
- Over 160 workers commit to training on their Individual Development Plans

PRE-ASSESSMENT RESULTS

Tab Survey Form - Level M

243 Personnel Assessed

37 Average Age

91 Male 152 Female

Production Personnel

	<u>Avg.</u> Grade <u>Level</u>	<u>% Tested</u> < 8th <u>Grade</u>
Reading	9.9	17.6%
Math	8.9	34%
Writing	8.4	40%

* excludes management/engineer level personnel.

FUNCTIONAL FLOW CHART

**Start-Up
Phase**

**Operation
Phase**

**Evaluation
Phase**

← Start → → 18 months → ← Extension(s) → ← Finish →

	PRE-ASSESSMENT	---	POST-ASSESSMENT	
Hire Staff	Block I Reading Math Writing 15 weeks @ 1 ½ hrs/wk	Block II Reading Math Writing 15 weeks @ 1 ½ hrs/wk	Block III Reading Math Writing 15 weeks @ 1 ½ hrs/wk	Extension Block IV Reading Math Writing 15 weeks @ 1 ½ hrs/wk
Develop Curriculum 12 weeks	Team Building & Problem Solving Skills Training 8 week sessions @ 1 ½ hrs long			
				Evaluate Program

BLOCKS I, II, III, & IV Class Completion Summary

142 Total # of Employees completing
basic skills course(s)

Total completing in each skill category

58	Reading
88	Math
<u>71</u>	Writing
217	TOTAL
<u>10</u>	Duplicated courses
227	TOTAL

of individuals completing courses

20 completed 3 courses =	60 course completions
35 completed 2 courses =	70 course completions
87 completed 1 course =	87 course completions
	10 duplicated a course
142 TOTAL participants	227 TOTAL course completions

WORKPLACE SKILL BUILDING

Evaluation Summary

Blocks I, II, III & IV

	PRE-TEST			POST-TEST			AVG SCALE INC	AVG GRD INC
	AVG %	AVG SCALE	AVG GRADE	AVG %	AVG SCALE	AVG GRADE		
READING ⇒	91.6	782.5	9.5	92.3	779.1	9.7	-3.4	0.2
	♦ 78.9	732.3	7.0	82.7	752.7	8.1	20.4	1.1
MATH ⇒	87.0	784.8	9.3	88.2	793.2	9.7	8.4	0.4
	♦ 78.1	752.8	7.5	81.9	775.1	8.6	22.3	1.1
WRITING ⇒	82.1	735.3	8.5	83.8	742.6	9.1	7.3	0.6
	♦ 76.4	712.0	7.2	80.1	729.0	8.6	17.0	1.4

⇒ - Includes averages of all employees taking class.

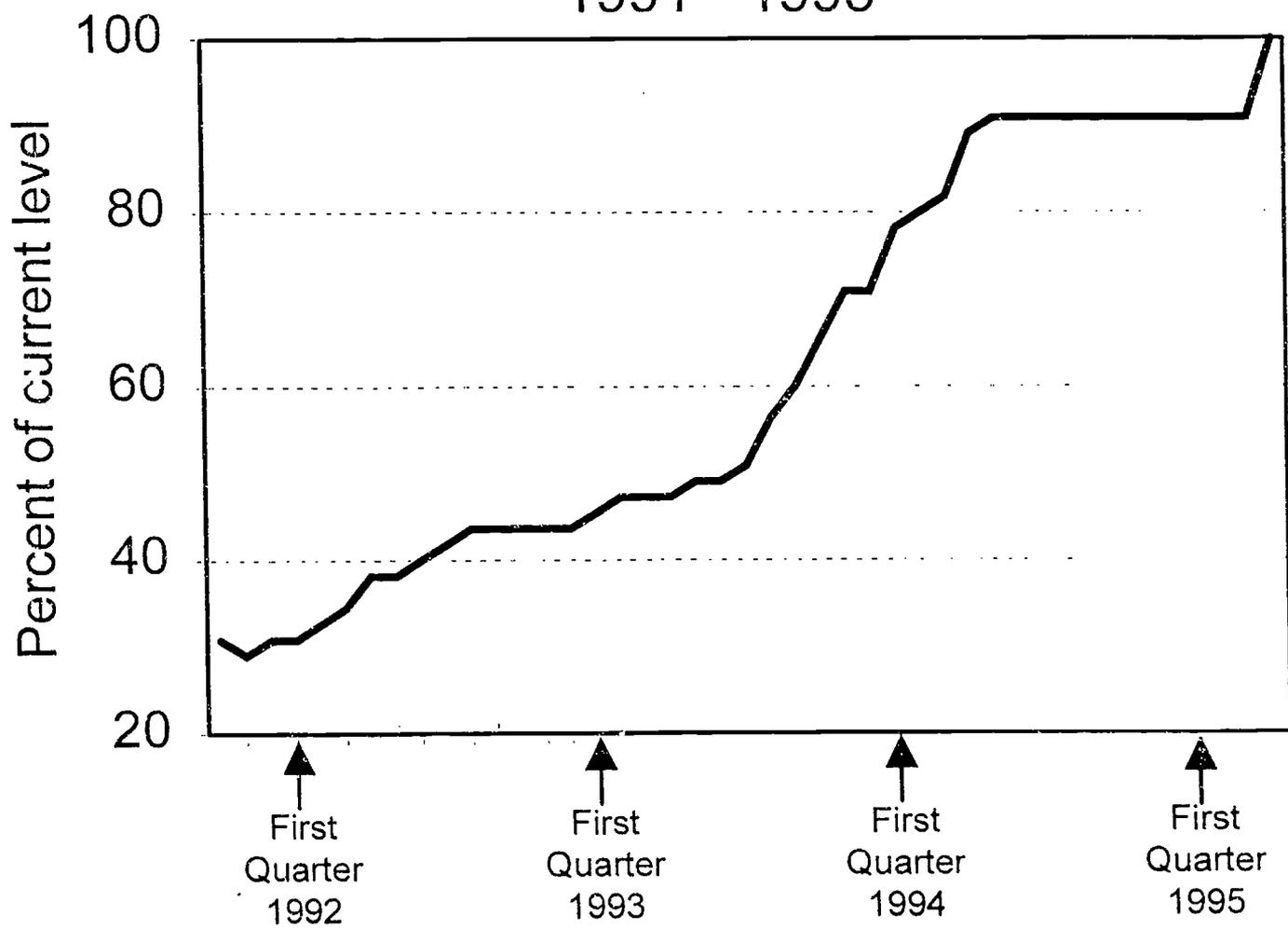
♦ - Excludes employees having "max" pre-test score of 10.9 G.P.A.

TRAINING OUTCOMES

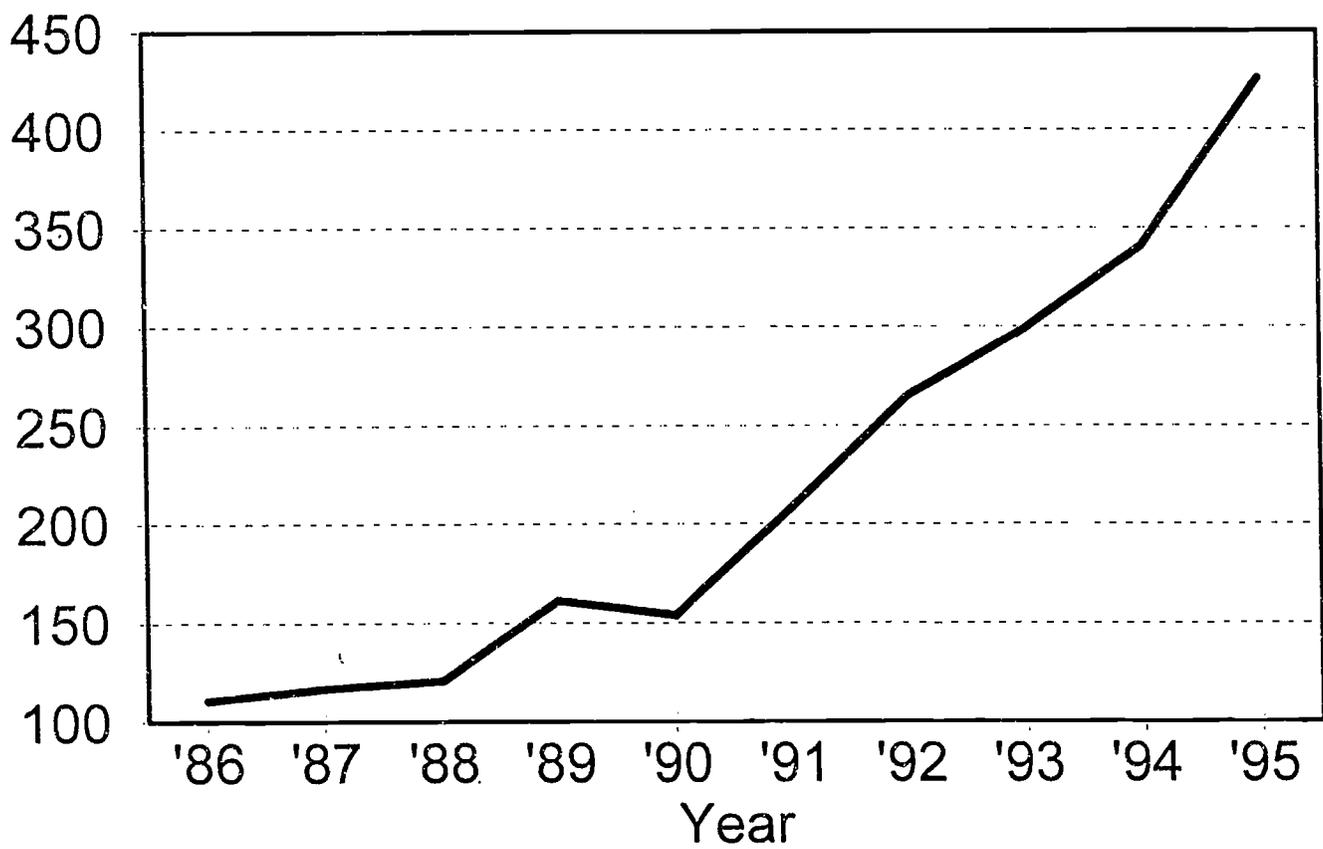
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Production Equipment

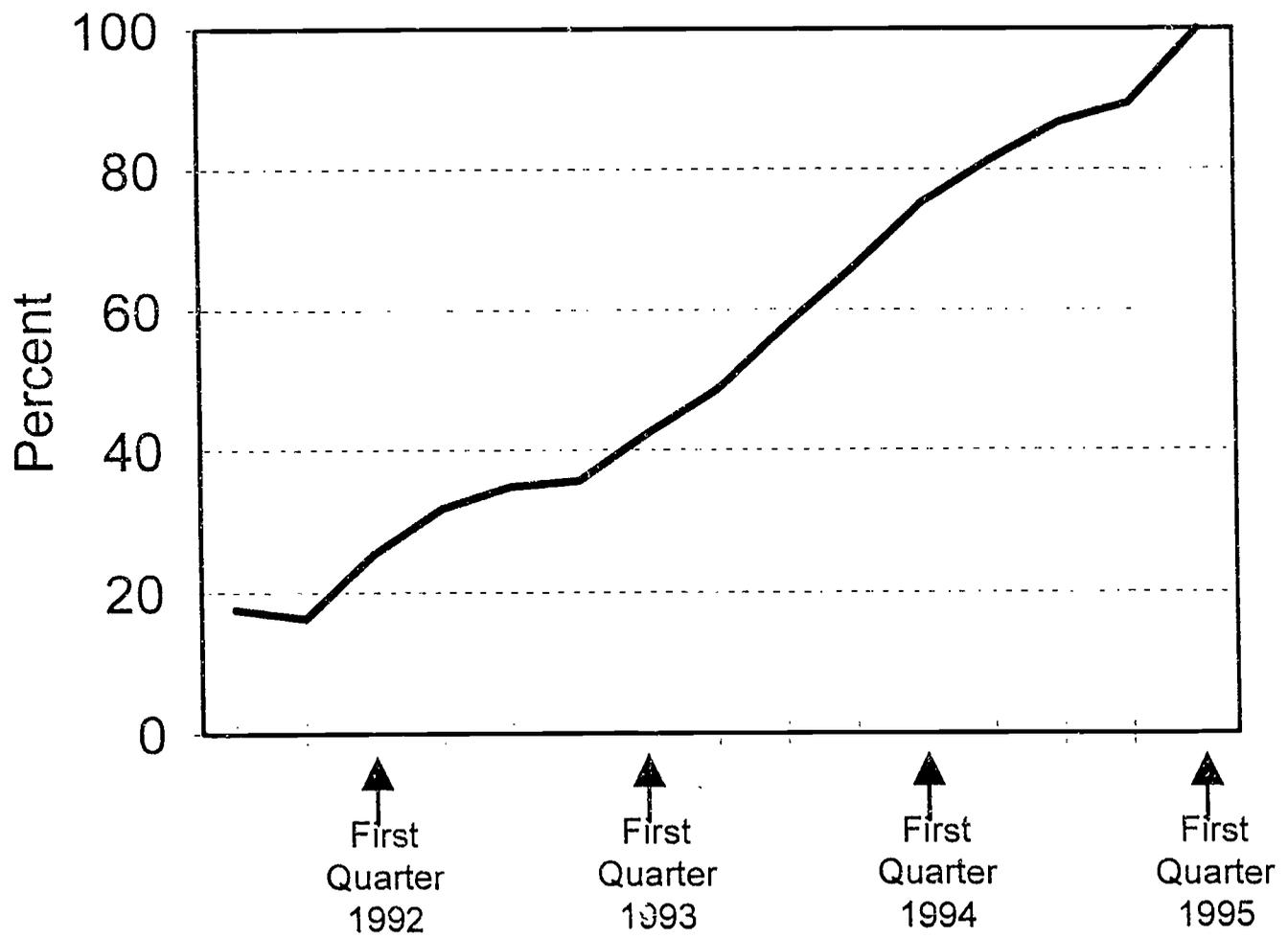
1991 - 1995



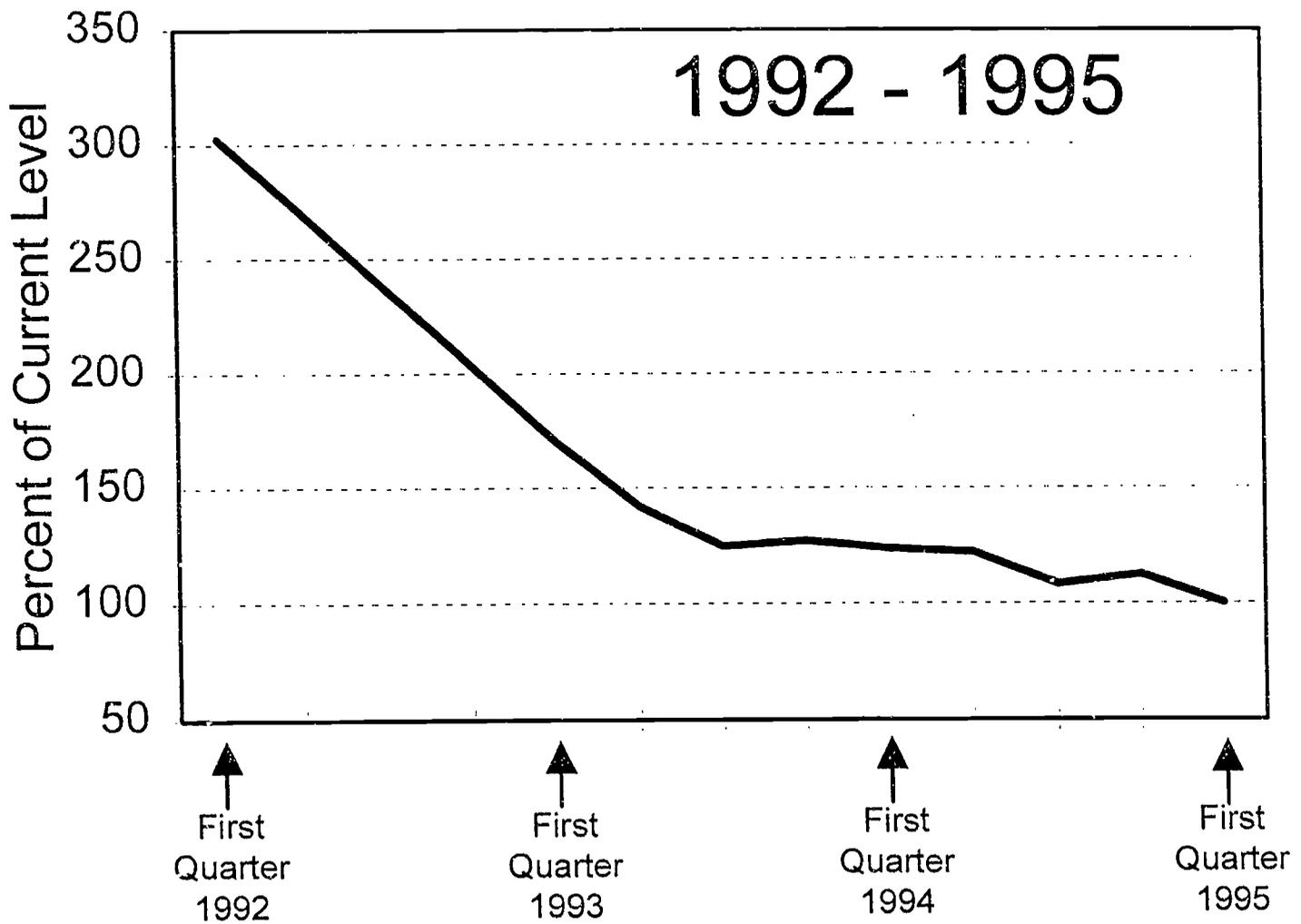
Employment

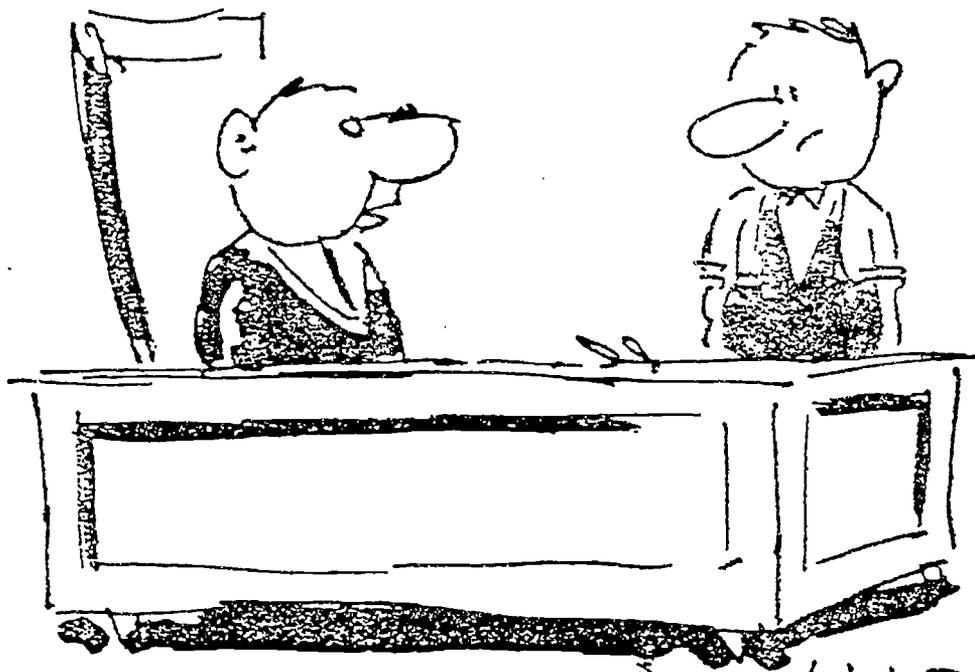


1992 - 1995 Production



Labor per Unit





WILDT

"We had another defect-free month until that quality award
fell into the machinery."